July 2021

Binder 112, Lecithodendriidae A-B [Trematoda Taxon Notebooks]

Harold W. Manter Laboratory of Parasitology

LECITHODENDRIIDAE Odhner, 1910

Family diagnosis. — Body delicate, elongate to spherical, spined or not. Oral sucker subterminal, pharynx present. Esophagus and ceca very variable in length; latter never reaching to posterior extremity. Acetabulum comparatively small, at or near middle of body. Testes usually symmetrical, sometimes diagonal, at varying levels. Cirrus pouch usually present. Genital pore in forebody, rarely in hindbody, median, submedian, lateral or dorsal. Ovary submedian, in fore- or hindbody. Receptaculum seminis and Laurer's canal present. Vitellaria forming bunches of follicles on each side in fore- and hindbody. Uterus strongly and irregularly winding in hindbody; eggs numerous, small. Excretory vesicle usually V-shaped, rarely tubular or saccular. Parasitic in vertebrates.

Type genus: *Lecithodendrium* Looss, 1896.

Key to subfamilies of Lecithodendriidae from mammals

1. Acetabulum modified into circular depression bounded anteriorly and posteriorly by a muscular ridge and produced on each side into a sucker-like pouch; genital pore in center of this depression; oral sucker and pharynx very small, esophagus unusually long ..... Vesperugidendriinae
   Acetabulum of normal structure 2
2. Vitellaria in forebody, cirrus pouch present 3
   Vitellaria in forebody, cirrus pouch absent 6
   Vitellaria in hindbody; cirrus pouch present; genital pore preacetabular 7
   Vitellaria in acetabular zone; cirrus pouch absent; genital pore marginal, near anterior extremity .... Cephalophallinae
3. Ceca short, not surpassing acetabulum 4
   Ceca long, surpassing postacetabular testis 5
4. Cirrus pouch preacetabular
   a) Genital pore preacetabular ..... Prosthodendriinae
   b) Genital pore at pharyngeal or postpharyngeal level ..... Phaneropsolinae
   Cirrus pouch in acetabular or postacetabular zone
   a) Testes in acetabular or postacetabular zone ... Limatulinae
   b) Testes in prececal shoulder region ..... Prosotocinae
5. Cirrus pouch preacetabular ..... Maxbrauniinae
   Cirrus pouch in acetabular or postacetabular zone Parabascinae
6. Genital pore marginal ..... Allassogonoporinae
   Genital pore median, preacetabular; body wider than long ..... Castroiinae
7. Vitellaria posttesticular ..... Lecithodendriinae
   Vitellaria pretesticular ..... Pycnoporinae

Key to subfamilies of Lecithodendriidae from reptiles

1. Vitellaria entirely or mostly in forebody 2
   Vitellaria in hindbody 3
2. Genital pore marginal, at varying levels of forebody ..... Pleurogenetinae
   Genital pore median, pre-acetabular ..... Prosthodendriinae
3. Cirrus pouch and metraterm very strongly developed; vitellaria scattered in hindbody; parasites of crocodiles ..... Exotidendriinae
   Cirrus pouch and metraterm not strongly developed; vitellaria clustered behind each testis; parasites of bats, occasionally of chameleons ..... Lecithodendriinae

LECITHODENDRIIDAE Odhner, 1910

Family diagnosis. — See p. 809.

Key to subfamilies of Lecithodendriidae from amphibians

1. Vitellaria confined to neck or shoulder region 2
   Vitellaria extending backward from neck or shoulder region as far as testicular or posttesticular region ..... Cryptotropinae
   Vitellaria extending a short distance or clustered, along

   ceca posterior to ovary or testes ..... Ganeoninae
2. Testes symmetrical, in shoulder region, prececal .. Prosotocinae
   Testes symmetrical or diagonal, in acetabular or post-acetabular region ..... Pleurogenetinae

Cryptotropinae n. subfam.

Subfamily diagnosis. — Lecithodendriidae: Body ellipsoidal to pyriform, spinose. Oral sucker large, prepharynx present, esophagus short. Ceca short. Acetabulum pre-equatorial. Testes symmetrical, postequatorial or rather near posterior extremity. Cirrus pouch claviform. Genital pore marginal or submarginal and dorsal at level of oral sucker or pharynx. Ovary posterolateral to acetabulum. Receptaculum seminis present. Vitellaria distributed in fore- and hindbody. Uterus extending into neck or shoulder region, less extensive in ovariotesticular area. Excretory vesicle Y- or V-shaped.

Key to genera of Cryptotropinae

Vitellaria mostly in forebody, partly in hindbody, but not occupying posttesticular region; uterus extending into neck region ..... *Cephalouterina*
Vitellaria extending profusely from pharyngeal level to posterior extremity; uterus extending into extracecal fields but not into neck region ..... *Cryptotropa*

LECITHODENDRIIDAE Odhner, 1910

Family diagnosis. — See p. 809.

Key to subfamilies of Lecithodendriidae from birds

1. Cirrus pouch absent; genital pore median, postacetabular ..... Echinuscodendriinae
   Cirrus pouch present 2
2. Vitellaria postcecal, pretesticular; cirrus pouch encircling acetabulum; genital pore slightly out of median line, postacetabular ..... Basantisiinae
   Vitellaria cecal or extracecal 3
3. Genital pore on lateral margin of hindbody .... Leyogoniminae
   Genital pore median or submedian, in forebody . Phaneropsolinae

Yamaguti, 1958

Lecithodendriinae Looss, 1902

Subfamily diagnosis. — Lecithodendriidae: Body fusiform, oval to lageniform. Oral sucker small, esophagus rather long. Ceca short, not surpassing acetabulum. Acetabulum small, pre-equatorial. Testes symmetrical, at or near acetabular level. Cirrus pouch ovoid, pre-acetabular, enclosing winding tubular seminal vesicle. Genital atrium spined or not, opening immediately in front of acetabulum. Ovary at varying levels near acetabulum. Receptaculum seminis and Laurer's canal present. Vitellaria clustered on each side behind testis. Uterus occupying most of hindbody. Excretory vesicle V-shaped. Parasites of Chiroptera.

Lecithodendrium Looss, 1896
syn. *Mesodendrium* Faust, 1919
Glirotrema Kirschenblat, 1941

Generic diagnosis. — Lecithodendriidae, Lecithodendriinae: Body fusiform, oval to lageniform. Ceca short, terminating in front of testes, not surpassing acetabulum, which is pre-equatorial. Testes one on each side at or near acetabular level. Cirrus pouch between acetabulum and intestinal bifurcation, containing winding seminal vesicle and well developed prostatic complex. Genital atrium spined or not, opening immediately in front of acetabulum. Ovary variable in position relative to testes and acetabulum. Laurer's canal arising from receptaculum seminis. Vitellaria forming a grape-like bunch behind each testis. Uterine coils occupying most of hindbody. Excretory vesicle V-shaped with terminal pore. Intestinal parasites of Chiroptera.

Genotype: *L. linstowi* Dollfus, 1931 (Pl. 87, 1053), syn. *L. ascidia* van Beneden of Linstow, Looss, etc., in *Pipistrellus* and other bats; Europe.

Other species:

L. attia (Bhalerao, 1926) in *Nyctinomus plicatus;* Burma. Skarbilovich (1948) proposed a new subgenus *Mesodendroides* for this species.

L. breckenridgei Macy, 1936 in *Pipistrellus subflavus;* Minnesota.

L. elongatum (Pande, 1935) in rectum of *Vesperugo abramus;* India.

L. granulosum (Looss, 1907) in *Vesperugo kuhli;* Egypt.

L. japonicum Yamaguti, 1939, syn. *Acanthatrium (Mesothatrium) japonicum* (Y.) Skarbilovich, 1948, in *Rhinolophus ferrum-equinum nippon;* Japan.

L. macrostomum (Ozaki, 1929) in *Pipistrellus abramus;* Tokyo, Japan. Also in *Nyctalus maximus aviator;* Hokkaido.

L. mödlingeri (Pande, 1935) in *Nycticejus kuhli;* India.

L. pricei Pérez Vigueras, 1940, in *Artibeus jamaicensis parvipes;* Cuba.

L. rotundum Strom, 1935, in *Rhinolophus ferrum-equinum bokharensis* and *R. hipposideros;* Russia.

L. semen (Kirschenblat, 1941) Skarbilovich, 1948, syn. *Glirotrema s.* K., in *Dyromys nitedula;* Russia.

L. spathulatum (Ozaki, 1929) in *Pipistrellus abramus;* Tokyo.

Lecithodendrium Looss, 1896

Generic diagnosis. — See p. 811.

Representatives from reptiles.

L. dillanei Nicoll, 1918, in a sea snake (*Distira* sp.).

L. hirsutum Looss, 1896 (Pl. 56, Fig. 685), syn. *Mesodendrium h.* (Looss, 1896) Faust, 1919, in chameleon; Alexandria.

LECITHODENDRIIDAE Odhner,1911

Diagnosis (from Mehra,1935)

Cuticle with or without spines. Excretory bladder V-shaped with or without short stem, rarely Y-shaped. (Olivier,1938 includes here Allassogonoporus which has a sac-shaped excretory bladder). Intestinal ceca of varying length. Genital pore median,submedian, or sinistral, pre-acetabular or at the side of acetabulum. Testes symmetrically opposite or obliquely behind one another. Ovary dextral or median, pre- or post-acetabular; seminal receptacle and Laurer's canal present. Cirrus sac present, replaced by a pseudocirrus sac, or absent; seminal vesicle usually coiled; pars prostatica and prostate gland cells well developed. Uterus much coiled mostly post-testicular. Vitellaria of variable extent, pre- or post-equatorial. Eggs numerous, small, 15 to 60 μ long. Parasitic in insect eating vertebrates, from fishes to mammals.

Type genus: Lecithodendrium Looss,1896

Life cycles studied for:

Lecithodendrium chilostomum	by Brown,1935
Mosesia chordeilesia	by McMullen,1936

L. chilostomum has a xiphidiocercaria developing in an undertermined mollusc, penetrating larvae of an insect, Phryganea grandis, a caddis fly. Metacercaria encyst in the muscles of the thorax. Final host a bat.

Subfamily Lecithodendriinae Looss

True cirrus sac lacking. Ceca never reaching beyond ventral sucker. Genital pore median in front of the ventral sucker. Eggs 17 to 26 μ long. In mammals, birds, and reptiles.

Type genus: Lecithodendrium Looss, 1896

Other genera: Pycnoporus Looss

Phaneropsolus Looss

~~Parabascus Looss, 1907~~

Mesodendrium Faust

Acanthatrium Faust,

~~Limatulum Travassos, 1921~~

Castroia Travassos

Prosthodendrium Dollfus, 1931

A Revision of the Lecithodendriidae: Skarbilovich, T.S. 1943. Compt.Rendus (Doklady) de l'Academie des Sciences U.R.S.S

Skarbilovich subdivides the family on the basis of the position of the genital pore: each subfamily is then divided into tribes according to the presence or absence of a "bursa" and the relative position of genital pore and the acetabulum.

The Lecithodendriea n. tribe has no bursa and the pore lies at the anterior edge of the acetabulum

The Phaneropsolea n. tribe has a bursa and the pore lies at the level of the intestinal forking

The Gyrobascea n. tribe has no bursa and the pore is posterior to the acetabulum.

The Pleurogenea n. tribe has the genital pore on the lateral edge of the body anterior to the acetabulum

The Brandesiea n. tribe has the pore on the lateral edge of the body on a level with or posterior to the acetabulum.

The Limatulea n. tribe has a bursa and a posteriorly placed pore

New genera: Skrjabinodendrium. Type: Lecithodendrium orospinosa

Travassodendrium. Type: L. bhaleraoi
Others: T.pushpai
T.mehrai
T.allahabadi

Chiroptodendrium. Type: L.luzonicum

Echinuscodendrium. Type: L.echinuscus

Data from Helm. Abstracts 12 (5):81.

P. Familia Lecithodendriidae ODHNER, 1910; ODENING, 1964 char. emend.

Diagnosis.

Microphalloidea mit Mundsaugnapf, Bauchsaugnapf, Pharynx, Oesophagus und zwei kurzen oder langen Darmschenkeln sowie mit echtem oder falschem oder ohne Cirrusbeutel und medianem, submedianem oder seitlich verschobenem (d. h. lateralem, jedoch nichtmarginalem oder submarginalem) Genitalporus; Testes meist parallel gelegen; Ovarium vor, hinter oder zwischen den Testes; Exkretionsblase V-, U- oder Y-förmig, Protonephridienformel der Adulti meist 2 [(2 + 2 + 2) : (2 + 2 + 2)] (z. B. bei *Lecithodendrium*, *Prosthodendrium*, *Parabascus*, *Mosesia*, *Pleuropsolus*, *Postorchigenes*)[1]; Parasiten des Darmtrakts (selten der Gallengänge oder Gallenblase) von Säugetieren, Vögeln oder Reptilien; 1. Zwischenwirte sind vorherrschend Süßwasserprosobranchier; die Cercarien sind ‚Cercariae virgulae' (und ‚Cercariae microcotylae'?).

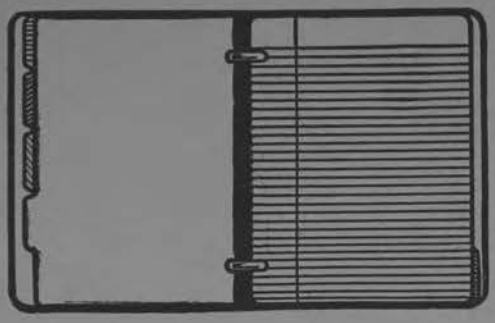
Typische Gattung: *Lecithodendrium* LOOSS, 1896.

Nominat-Unterfamilie: Lecithodendriinae LÜHE, 1901.

From Odening, 1964

LECITHODENDRINAE

LOOSE LEAF INDEX



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CLASS SCHEDULE

PERIOD		FIRST	SECOND	THIRD	FOURTH	FIFTH	SIXTH	SEVENTH	EIGHTH
ONDAY	COURSE								
	INSTRUCTOR								
UESDAY	COURSE								
	INSTRUCTOR								
EDNESDAY	COURSE								
	INSTRUCTOR								
HURSDAY	COURSE								
	INSTRUCTOR								
IDAY	COURSE								
	INSTRUCTOR								
TURDAY	COURSE								
	INSTRUCTOR								

LECITHODENDRIUM Looss, 1896

Skin smooth or split superficially into very fine spines, no true spines. Excretory bladder V-shaped, Genital pore close in front of acetabulum. Cirrus sac lacking; the long tube-like seminal vesicle lies in a knot in a connective tissue covering which is occasionally sharply set off from the parenchyma and which can function as a cirrus sac being provided with muscles but it is never completely enclosed. Uterus limited to posttesticular area and running in cross folds.
Type:

History

The genus first included: Distomum granulosum, D.hirsutum, D.chefrenianum, D.obtusum, D.sphaerula, D.ascidia, D.ascidioides, and D.heteroporum.

Later about a dozen species were added.

Faust (1919) recognized only the following species: sphaerula, ascidia, chefrenianum, chilostomum, cordiforme, glandulosum, obtusum, posticum, pyramidum, granulosum, hirsutum and urna.

He named the new genus Acanthatrium for sphaerula and nycteridis (spines on genital atrium, testes antacetabular)

He retained the genus Lecithodendrium for those with aspinose genital atrium, vitellaria lateral to pharynx, testes in same plane as acetabulum. Species: ascidia, chefrenianum, chilostomum, cordiforme, glandulosum, obtusum, posticum, pyramidum.

He proposed the genus Mesodendrium for those with aspinose genital atrium, testes at level of acetabulum and vitellaria posterior to acetabulum. Species: granulosum, hirsutum, urna.

Bhalerao (1926) accepts thes e three genera but differs on the distinction between Lecithodendrium and Mesodendrium. He believes Mesodendrium should include those species with the vitellaria posterior to the testes, Lecithodendrium with the vitellaria anterior to the testes. He proposes to thus remove, L.ascidia from Lecithodendrium and places it in Mesodendrium. L.urna he would remove from Mesodendrium and place it in Lecithodendrium.

Odhner (1911) proposed the subgenus Paralecithodendrium for those species with lobed or much branched ovary anterior to the acetabulum.

See Mehra 1935. He considers Acanthatrium a synonym of Lecithodendrium

Lecithodendrium

Species:

L. japonicum Yamaguti, 1939
L. linstowi (Dollfus, 1931)
Syn. L. ascidia of Linstow, Looss, etc.
L. mödlingeri (Pande, 1935)
L. granulosum Looss
L. rotundum Shtrom
L. breckenridgei Macy, 1936
L. sphaerula
(Acanthatrium ~~sphaerula~~ (Faust, 1919))
L. chilostomum
L. cordiforme
L. obtusum
L. porticum
L. pyramidum
L. hirsutum
L. urna
L. nycteridis
(Acanthatrium nycteridis Faust, 1919)
L. dinanatum Bhalerao, 1926
L. lynchi (Ingles, 1936) Rankin, 1938
~~L. orospinosa~~

From Bhalerao 1926

The following key is given to help the separation of the different species of *Lecithodendrium*

Key to the Species of Lecithodendrium.

1.	Ovary much [illegible]	2.
	Ovary [illegible]	4.
2.	Ovary [illegible] size	3.
	[illegible] very large, extending from one testis to [illegible]	*L. ovimagnosum.*
3.	[illegible] gland small, body more than 1·5 mm. [illegible]	*L. obtusum.*
	[illegible] gland large, body less than 1·5 mm. long.	*L. glandulosum.*
4.	[illegible] coils horizontal	7.
	[illegible] coils longitudinal	5.
5.	Oral sucker without spines, testes level with [illegible] sucker	6.
	Oral sucker with spines, testes level with genital pore	*L. orospinosa.*
6.	Ovary [illegible] to testes, vitellaria not extending beyond [illegible] cæca	*L. longiforme.*
	Ovary [illegible] testes, vitellaria extending beyond [illegible] cæca	*L. dinanatum.*
7.	Cæca end [illegible] anterior to testes, excretory bladder V-[illegible]	8.
	Cæca reach [illegible] testes, excretory bladder Y-shaped	10.
8.	Vitelline follicles [illegible] up to testes	*L. urna.*
	Vitelline follicles [illegible] or to intestinal cæca	9.
9.	Body broader anteriorly, oral sucker the larger	*L. chefrenianum.*
	Body fusiform, both suckers equal	*L. pyramidum.*
10.	Body pyriform	*L. codiforme.*
	Body elliptical or fusiform	11.
11.	Suckers almost equal	*L. posticum.*
	Oral sucker very large	*L. chilostomum.*

2. *Lecithodendrium antetestes* sp. n. *(Lecithodendridae)* Prokopic, 1957

Kleine, länglich birnenförmige Saugwürmer (Abb. 1b), 1,2—1,6 mm lang und 0,65—0,8 mm breit. Von dem Bauchsaugnapfen beginnend, verengt sich der Körper auffällig. Am Vorderende ist die Kutikula mit kleinen Stacheln bedeckt und die hintere Körperhälfte, ähnlich wie bei Panopistus europaeus aus der Waldspitzmaus *(Sorex araneaus)* segmentiert. Das hintere Körperende dieses Saugwurmes, wo die Exkretionsorgane münden, ist etwas breiter. Der Mundsaugnapf ist 0,285—0,38 mm im Durchmesser. Der Bauchsaugnapf ist grösser: 0,75 × 0,4 mm. Er liegt annähernd in der Mitte des Körpers. Die Dotterstöcke liegen symmetrisch an beiden Seiten beginnend von hinterem Rande des Bauchsaugnapfes nach hinten. Die ovalen Hoden, die 0,34—0,375 × × 0,25—0,29 mm messen, liegen symmetrisch an beiden Seiten vor dem Bauchsaugnapfe, sowie auch vor dem Ovarium und den Dotterstöcken. Das ovale Ovarium finden wir links von dem Bauchsaugnapfen. Es ist 0,09—0,1 × 0,08 bis 0,09 mm im Durchmesser. Die Gebärmutter füllt die hintere Hälfte des Körpers mit ellipsenförmigen 0,018—0,024 mm × 0,008—0,010 mm grossen Eiern. Neben der Körpergrösse und einer sonderbaren Form unterscheidet sich die neue Art von den anderen ihrer Gattung besonders durch die Lage der Hoden vor dem Bauchsaugnapfen, nach der auch der Name gewählt wurde. Die neue Art ist ähnlich der *Lecithodendrium granulosum*, bei der die Hoden ebenfalls den vorderen Rand des Bauchsaugnapfes überlangen.

Der Wirt: *Neomys fodiens.*

Lokalisation im Wirte: Dünndarm.

~~Zool.~~ Acta Soc. Zool. Bohemoslov. 21(1): 44-65

Lecithodendrium breckenridgei, Macy 1936

Four specimens of a new species of the genus Lecithodendrium, s. str., were found by the writer in the intestine of the bat Pipistrellus subflavus, taken from a cave at St. Peter, Minnesota, February 12, 1934. The hosts were collected by Mr. Gustav A. Swanson and Mr. Walter J. Breckenridge of the University of Minnesota, and I am under obligations to them for allowing me to dissect two of the specimens.

Fig. 1. Lecithodendrium breckenridgei, type. Dorsal aspect.

Lecithodendrium breckenridgei, ~~new species.~~ Macy, 1936

Specific diagnosis. — Lecithodendrium. — Body pyriform to elliptical, 0.53 to 0.67 mm. long by 0.32 to 0.40 mm. broad. Cuticula smooth. Oral sucker subterminal or terminal, 0.04 to 0.064 mm. long by 0.055 to 0.083 mm. wide. Pharynx 0.020 to 0.030 mm. long by 0.023 to 0.032 mm. wide. Oesophagus of moderate length. Intestinal ceca ending at anterior margins of testes. Ventral sucker between the testes, 0.060 to 0.081 mm. long by 0.059 to 0.08 mm. wide. Testes oval, 0.075 to 0.118 mm. long by 0.055 to 0.082 mm. wide, located at junction of first and second thirds of the body length, at posterior tips of ceca. Prostate mass larger than ventral sucker, 0.070 to 0.114 mm. in diameter, situated between ventral sucker and intestinal fork. Ovary oval, 0.06 to 0.082 mm. long by 0.09 to 0.11 mm. wide, partially posterior to ventral sucker and testes. Vitellaria consisting of six to eight very large follicles on each side of the body just behind the testes. Uterus filling the region posterior to the ovary. Eggs 0.011 to 0.12 mm. wide by 0.022 to 0.023 mm. long.

Host. — Pipistrellus subflavus (F. Cuvier).

Location. — Intestine.

Distribution. — United States of America (St. Peter, Minnesota).

Type specimen. — U.S.National Mus. Helm. Coll.; paratypes in author's collection.

This species differs from L. macrostomum, L. hirsutum, and L. attia in that the ventral sucker is slightly larger than oral sucker, whereas in the latter three species the oral sucker is much the larger. Our species differs from L. spathulatum in that the ventral sucker is nearly equal in size to the testes but is very much smaller than the testes in the latter species. L. breckenridgei is distinguished from L. granulosum by the relatively larger yolk follicles and by the smaller ventral sucker.

As Dollfus, 1931, has pointed out, only species with vitellaria posterior to the testes may be placed in the genus Lecithodendrium, s. str., because of the fact that L. ascidia von Linstow, 1884, nec Van Beneden, 1873, selected as the genotype by Looss, 1899, has such a condition. The name ascidia, however, can apply only to the trematode described earlier by Van Beneden (it has been rediscovered and redescribed by Mödlinger, et al.), in which the vitellaria are pretesticular. Therefore, Dollfus has renamed the confused ascidia of von Linstow (with vitellaria post-testicular) as linstowi, the same species selected by Looss as the type of the genus Lecithodendrium. Therefore Mesodendrium Faust, 1919, falls as a synonym of Lecithodendrium. The true ascidia Van Beneden, with vitellaria pretesticular, Dollfus places, with related species, in his new genus Prosthodendrium.

A new bat trematode, Lecithodendrium breckenridge with a key to the species of the genus.

By Ralph W. Macy.

With 1 figure in the text.

Four specimens of a new species of the genus Lecithodendrium s. str., were found by the writer in the intestine of the bat Pipistrellu subflavus, taken from a cave at St. Peter, Minnesota, February 12, 193 The hosts were collected by Mr. Gustav A. Swanson and Mr. Walte J. Breckenridge of the Universit of Minnesota, and I am under obl gations to them for allowing me t dissect two of the specimens.

Fig. 1. Lecithodendrium breckenridgei, type. Dorsal aspect.

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(over)

Key to the species of Lecithodendrium.

Vitellaria arranged in two narrow, longitudinal bands reaching more than half way from **testes** to posterior tip of body . . . . . L. attia (Bhalerao, 1926)
Vitellaria not arranged in longitudinal bands 2
Oral sucker twice size of ventral sucker 3
Oral sucker not twice size of ventral sucker 4
Ovary post-equatorial; body flask-shaped . . . . . L. macrostomum (Ozaki, 1929)
Ovary pre-equatorial; body spindle-shaped . . . . . L. hirsutum (Looss, 1896)
Vitellaria reaching testes; oral sucker about same size as testes 5
Vitellaria not reaching testes; oral sucker much smaller than testes 6
Ventral sucker considerably larger than oral sucker but larger than prostate mass
L. granulosum (Looss, 1907)
Ventral sucker only slightly larger than oral sucker and smaller than prostate mass
L. breckenridgei
Ovary same size or smaller than ventral sucker and much smaller than testes
L. linstowi (Dollfus, 1931)
Ovary about twice size of ventral sucker and not much smaller than testes
L. spathulatum (Ozaki, 1929)

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Lecithodendrium dinanatum Bhalaerao, 1926

A new Species of Trematode from Nycticejus [illegible] with a Key to the Species of Lecithodendrium.

By G. D. Bhalerao, M.Sc., Biology Department, University of Rangoon.

1926

On examination of the intestine of a bat, *Nycticejus pallidus*, dissected by Professor F. J. Meggitt, three Trematodes were obtained. These were pear-shaped, measuring 0·57–0·59 × 0·32–0·34 mm., the maximum breadth being at rather more than two-thirds of the length from the anterior extremity. The cuticle was smooth and transparent enough for the elucidation in the living condition of most of the internal anatomy. The opening of the mouth at the anterior extremity is surrounded by a circular oral sucker measuring 0·09 mm. in diameter. The ventral sucker, 0·05 mm. in diameter, is situated centrally at about one-third the distance from the anterior end: the ratio between the two suckers being nearly 1 : 2. Immediately behind the oral sucker is a globular muscular pharynx, 0·03 mm. in diameter. A very small œsophagus is present, but cannot be seen in the mounted specimens. The two short and wide intestinal cæca, measuring 0·07 × 0·04 mm., diverge from the pharynx towards the testes and end much anterior to the latter. The epithelium of these is not thick as in some species of *Lecithodendrium*.

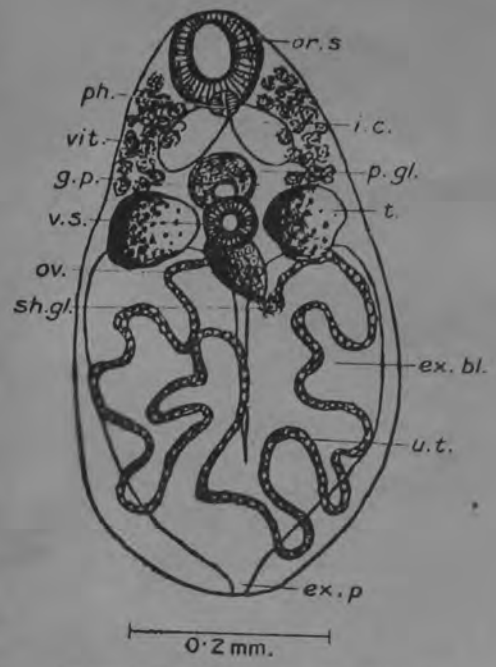
The excretory system can best be studied in the living condition. At the posterior end is an excretory pore leading into a V-shaped excretory bladder. This latter has very wide arms, which approach each other in the central line and occupy more than half the posterior area of the body, overlapping partly the posterior portion of the testes.

The testes, 0·07–0·08 × 0·06–0·07 mm., are from round to ovoid bodies lying symmetrically on either side of the ventral sucker. From their inner border arise two vasa efferentia uniting centrally and dorsal to the ventral sucker to form a vas deferens. This latter enlarges into a vesicula seminalis, which passes into a ductus ejaculatorius after a short curve. The genital pore, through which the ductus ejaculatorius opens to the exterior, is situated immediately anterior to the ventral sucker. A large prostate gland, 0·06 mm. in diameter, partly anterior to and partly overlapping the ventral sucker, surrounds the ductus ejaculatorius.

The ovary, 0·075 × 0·05 mm., is a pear-shaped body lying posterior to and slightly overlapping the ventral sucker. Posteriorly it is continuous with a small oviduct which enters the ootype surrounded by feebly developed shell-glands. Laurer's canal and a receptaculum seminis are present. The uterus arising near the posterior end of the ovary passes to the left, where it first forms a coil, and then passes to the right where it coils again. Ultimately it opens to the exterior by means of the genital pore. All the coils lie posterior to the testes and are disposed antero-posteriorly. The vitellaria with 14–18 follicles on each side are situated laterally in the anterior part of the body; they extend from the posterior half of the oral sucker to the anterior border of the testes, and at places overlap the intestinal cæca. A vitelline duct from each gland extends dorsally to the ventral sucker, and unites with its fellow to form a common duct which enters the ootype. The uterus is filled with yellowish-brown operculated eggs, measuring 0·022–0·023 × 0·012–0·014 mm.

The present form, having vitellaria anterior to the testes, unbranched ovary, and uterine coils disposed longitudinally,

is similar to *L. orospinosa* and *L. longiforme*, previously described (Bhalerao, 1926). From these it differs in having the ovary posterior to the testes, the vitelline follicles extending beyond the ends of the intestinal cæca, and the intestinal cæca thin, short, and ending much anterior



Lecithodendrium dinanatum. (Ventral view.)

ex.bl. Excretory bladder.
ex.p. Excretory pore.
g.p. Genital pore.
i.c. Intestinal cæcum.
or.s. Oral sucker.
p.gl. Prostate-gland.
ph. Pharynx.
sh.gl. Shell-gland.
t. Testis.
ut. Uterus.
vit. Vitellaria.
vit.d. Vitelline duct.
v.s. Ventral sucker.

to the testes; in addition the former of these has the testes level with the genital pore and a spiny oral sucker, and the latter has its uterine coils unbroken into right and left halves. In view of these differences it becomes necessary

to erect a new species for reception of the present form, for which I propose the name *Lecithodendrium dinanatum*.

Specific Diagnosis.—Lecithodendrium: Body pear-shaped. Intestinal cæca short, ending much anterior to testes. Excretory bladder with very broad arms meeting in the central line. Testes level with ventral sucker. Ovary entire, posterior to testes. Uterine coils longitudinal, divided into right and left halves. Vitellaria lateral in anterior part of body: follicles extending up to testes. Eggs yellowish brown, operculated, 0·022–0·023 × 0·012–0·014 mm.

The genus *Lecithodendrium* was formed by Looss (1896) to include *Distomum granulosum*, *D. hirsutum*, *D. chefrenianum*, *D. obtusum*, *D. sphærula*, *D. ascidia*, *D. ascidioides*, and *D. heteroporum*. Subsequently to this, about a dozen more species were proposed and included; Faust (1919), however, in the revision of the genus, recognises only the species *sphærula*, *ascidia*, *chefrenianum*, *chilostomum*, *cordiforme*, *glandulosum*, *obtusum*, *posticum*, *pyramidum*, *granulosum*, *hirsutum*, and *urna*, others either being excluded or being so inadequately described as to preclude the determination of their exact position. The species above mentioned he divided into three groups: (1) Those with spines on the genital atrium, testes antacetabular, level with genital pore, for which he proposes a new genus *Acanthatrium*, and includes in it the species *A. sphærula* and *A. nycteridis*. (2) Those with aspinose genital atrium, vitellaria lateral to pharynx, and testes in same plane as the acetabulum, for which he retains the name *Lecithodendrium*, with species *L. ascidia*, *L. chefrenianum*, *L. chilostomum*, *L. cordiforme*, *L. glandulosum*, *L. obtusum*, *L. posticum*, and *L. pyramidum*. (3) Those with aspinose genital atrium, testes level with acetabulum, and vitellaria posterior to cæca, for which he proposes the genus *Mesodendrium*, and includes in it the species *M. granulosum*, *M. hirsutum*, and *M. urna*. This division of the original genus into three is no doubt natural, but requires modification in the case of latter two groups. Faust regards the intestinal cæca as a barrier to the extension of the vitellaria, and accordingly as they pass that limit or not he distinguishes the two genera. It is not a satisfactory classification to place in one genus a specimen with a few follicles of vitellaria extending past the intestinal cæca and to exclude another which only differs from the first in having them rigidly anterior to these organs. The distribution of follicles may serve as a good specific character, but is not of sufficient importance for a generic distinction. The testes are the proper and most natural barrier to the

extension of the vitellaria, and the genera *Lecithodendrium* and *Mesodendrium* should therefore be distinguished from each other according as the vitellaria are anterior or posterior to the [illegible] Another [illegible] has crept into Faust's classifi[illegible] [illegible] n (1873) describes the [illegible]ria as being present [illegible] to the testes, a cha[illegible] which was later utilised by [illegible] 1909) for distin[illegible] the species *L. ascidia* from *L. chilostomum*. Faust, however, includes it in the genus *Lecithodendrium*, thus signifying that the vitellaria are present lateral to the pharynx; it should be removed from the genus *Lecithodendrium* and placed under *Mesodendrium*. Similarly, the species *L. urna* should be removed from the genus *Mesodendrium* and placed under *Lecithodendrium*, the vitellaria being distinctly anterior to the testes. Odhner (1911) proposed a new subgenus *Paralecithodendrium* to include forms with lobed or much branched ovary anterior to ventral sucker.

4. *Lecithodendrium granulosum* n. spec. Looss, 1907

Fig. 4.

Häufig im Darm von *Vesperugo kuhli*, Cairo.

Konservierte Individuen gewöhnlich vollkommen kugel- oder eiförmig zusammengezogen; einige gestreckter erhaltene um 0,5 mm lang und 0,2—0,25 mm breit und dick. Haut unbewaffnet, aber mit äußerst fein granulierter Oberfläche. Von den Saugnäpfen ist der hintere immer größer als der vordere, und zwar betragen die normalen Maße etwa 0,05—0,06 mm, bezw. 0,07—0,08 mm. Einige Individuen zeigen über beide Näpfe in weit geöffnetem Zustande, wobei der Mundsaugnapf dann eine ausgesprochene Trichterform annimmt; in solchen Fällen steigen die Maße, der Quere nach gemessen, für den Mundsaugnapf im Maximum bis auf 0,08 mm, für den Bauchsaugnapf im Maximum bis auf 0,1 mm. Pharynx klein, durchschnittlich 0,02 mm groß; Darmschenkel kurz. Exkretionsporus schwach ventral, Schenkel der Blase relativ lang, bis ungefähr zur Mitte der Hoden nach vorn reichend; ihre Enden werden, je nach der Kontraktion, teils neben, teils unter den Hoden gefunden (Fig. 4 A).

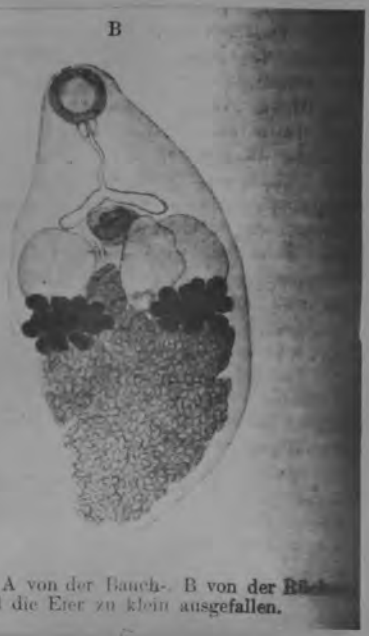
Genitalöffnung median kurz vor dem Bauchsaugnapfe; männlicher und weiblicher Leitungsweg trennen sich fast sofort. Das Metraterm läuft auf der linken Seite um den Prostatadrüsenkomplex herum, welcher letztere einen kurzen Ductus ejaculatorius, kleine Pars prostatica, und relativ lange, gewundene Samenblase umschließt. Hoden unregelmäßig rundlich, auf gleicher Höhe, und nach vorn immer über den Vorderrand des Bauchsaugnapfes hinausragend. Keimstock von fast derselben Größe wie die Hoden, unregelmäßig dreieckig, sein nach vorn gerichtetes, verbreitertes Ende 2 oder 3mal schwach eingekerbt. Er liegt dorsal zwischen Bauchsaugnapf und rechtem Hoden, sein Hinterende mehr in der Mitte des Körpers. Bei sehr stark kontrahierten Individuen steht er fast senkrecht zur Körperfläche und sein Umriß erscheint von oben gesehen kreisförmig oder oval, da das eingekerbte Ende dann gerade auf den Beschauer zu gerichtet ist. Die rosettenförmigen, aus etwa 12 großen Follikeln zusammengesetzten Dotterstöcke liegen ganz dorsal dicht hinter und zum Teil auch über den Hoden; die queren Dottergänge gehen immer weiter nach vorn zu, um ventral unter dem Keimstock zu einem kleinen Dotterreservoir zusammenzutreten (in Fig. 4 B angedeutet); in der Nähe desselben sieht man gelegentlich auch ein kleines Receptaculum seminis.

ein Laurerscher Kanal ist vorhanden. Die Uterusschlingen scheinen hauptsächlich quer zu verlaufen, doch ist davon nicht viel zu erkennen, da der Hinterkörper der Tiere von den Hoden ab meist prall mit Eiern gefüllt ist.

Die Eier sind regelmäßig oval, leicht gelbbraun, 0,019 mm lang, 0,011 mm dick.

Lecithodendrium granulosum ist die Art, die ich früher (1899 p. 7[illegible] unter Vorbehalt mit *Lecithodendrium ascidia* (van Ben.) (= *Dist. l*[illegible] Brds.) in Beziehung gebracht hatte. Da aber, wie aus Braun's Mitteilungen (1900, p. 224) ersichtlich, letztere Form bei 1,18 mm Länge und 0,33 mm Breite nur einen Mundsaugnapf von 0,082 mm und einen kleineren Bauchsaugnapf von 0,075 mm besitzt, so kann eine Identität beider Formen nicht mehr in Frage kommen.

Fig. 4. *Lecithodendrium granulosum* n. sp. A von der Bauch-, B von der Rückenseite; Vergr. ca. 150. In der Zeichnung A sind die Eier zu klein ausgefallen.



-OVER-

GENUS *Lecithodendrium* Looss, 1896

L. granulosum Looss, 1907

Found to occur in *Rhinolophus clivosus*, May 25, 1950, in caves near Kom Aushim; in *Taphozous perforatus*, January 21, 1952, caves at Abu Rauwash; in *Nycteris thebaica thebaica*, January 5, 1953; Abu Sir tombs and caves, Giza Province; *Asellia tridens tridens*, same date and locality; *Plecotus auritus christiei*, March 1, 1951, Sakkara tombs and pyramids, Giza Province; in *Pipistrellus kuhli*, July 16, 1952; barns of King's Estates, Idfina, Beheira Province; also found in *Pipistrellus sp.* collected at Sana', February 14, 1951.

Body length 1.07, body width 0.61; oral sucker 0.11 in diameter, approximately same size as ventral sucker which measures 0.10 in diameter; prostrate mass 0.088 wide.

Specimens in the U.S. Nat. Mus. Helm. Coll. No. 39260.

FROM MACY, HEYNEMAN AND KUNTZ, 1961

Lecithodendrium (L.) granulosum Looss, 1907 (Fig. 2C)

Syn.: *Lecithodendrium lagena* (Brandes) in Looss, 1899 (p. 715) = *Distomum ascidia*, Looss nec Van Beneden; *Mesodendrium granulosum* Faust, 1919; *Lecithodendrium (L.) hovorkai* Mituch, 1959.

Hosts:

Rhinolophus ferrumequinum ferrumequinum Schreb., *Rhinolophus clivosus* Cretzschmar, *Aselia tridens tridens* Geoffroy, *Myotis mystacinus mystacinus* Kuhl, *Myotis myotis myotis* Borkhausen, *Eptesicus nilssoni nilssoni* Keyser et Blas., *Pipistrellus kuhli kuhli* Kuhl, *Nycteris thebaica thebaica* Geoffr., *Eptesicus serotinus serotinus* Schreb., *Plecotus auritus christiei* Gray, *Miniopterus schreibersi schreibersi* Kuhl, *Taphozous perforatus* E. Geoffroy.

Distribution:

Egypt (Africa), Czechoslovakia (Europe).

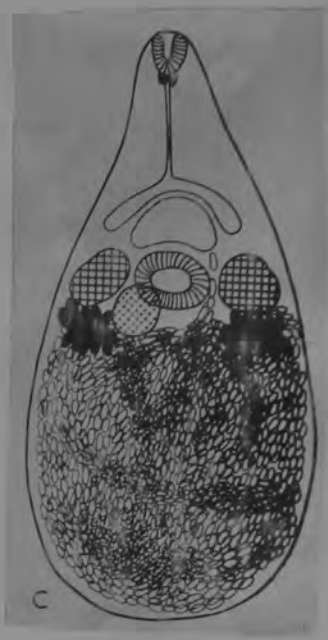
My material of 19 specimens comes from 3 host species from 4 localities in Czechoslovakia:

+*M. daubentoni*: Loubí near Děčín, 9. IV. 58 — 1 specimen.
E. nilssoni: Bílá Desná (Jablonec upon Nisa d.), 24. II. 58 — 7 specimens, Demänovská dračí ice-cave (Lipt. Mikoláš d.), 14. II. 61 — 12 specimens.
E. serotinus: Jeskyně Driny (Trnava d.) — 1 specimen.

Description (based on 19 specimens): Body length: 0.513 to 1.350 mm., body width 0.243 to 0.630 mm. Oral sucker diameter: 0.040 to 0.108 mm. (most frequently 0.090 mm.), ventral sucker diameter: 0.063 to 0.153 (most frequently 0.135 mm.). Ratio of oral sucker diameter to ventral sucker diameter 0.53 to 0.84. Ratio lower than 0.7 in 64.7 p.c. of specimens measured. Left testis 0.072 to 0.159 by 0.060 to 0.108 mm., right testis 0.080 to 0.144 by 0.060 to 0.108 mm. Ovary 0.063 to 0.108 by 0.056 to 0.108 mm. Eggs 0.016 to 0.020 by 0.008 to 0.011mm.

Small trematodes of typical fusiform body. Body sizes as ascertained do not correspond well with those given by Looss in the original description, but he had perhaps to deal with some contracted specimens according to his own diagnosis: "Konservierte Individuen gewöhnlich volkommen kugel- oder eiförmig zusammengezogen; einige gestreckter erhaltene um 0.5 mm lang und 0,2—0,25 mm breit und dick." Ventral sucker lying in front of a half of body length, always much larger than the oral and of the same sizes as testis and ovary. Copulatory bursa relatively large, extending between ceca and ventral sucker. Testes oval, smaller than bursa, extending paracetabularly. Small oval, roundish or triangular ovary lying right behind the ventral sucker. Lateraly behind testes two groups of 10 to 12 glands of vitelaria extend, covered always with very densely folded uterus. Uterus filling compactly all the posterior part of body behind the ventral sucker is typical for this trematode species. Excretory organ V-formed, its branches reaching up to the posterior bord of testes.

As to the characters of this species, they are evidently identical with those given by Mituch, 1959 for his species *Lecithodendrium* (L.) *hovorkai*. Therefore, his species should be considered a synonym of *L. (L.) granulosum* Looss, 1907.



From Hůrkova, 1963

Lecithodendrium (Lecithidendrium) hovorkai n. sp. — Mitugii, 1959

Beschreibung der Art: Trematode von birnenförmiger Gestalt, dorsoventral abgeplattet, mit glatter Cuticula. Vorderkörper langgestreckt, Hinterende des Körpers rund. Körperlänge von 1,032 bis 1,449 mm, maximale Breite im zweiten Körperdrittel 412—651 μ. Mundsaugnapf subterminal, von längsovaler Form und 79—93 × 106—119 μ Größe. Pharynx von querovaler Gestalt im Durchmesser 39—53 μ. Ösophagus 279—399 μ lang, endend mit einer Bifurkation am Beginn des mittleren Körperdrittels. Kurze und enge Verzweigungen der Darmschenkel erreichen eine Länge von 52 μ und eine Breite von 33 μ. Der rundliche 112—146 μ große Bauchsaugnapf liegt im zweiten Körperdrittel.

Geschlechtsöffnung rundlich, von 115—160 μ Größe, oberhalb des Bauchsaugnapfes, unterhalb der Darmbifurkation. Der Genitalporus mündet am Vorderrand des Bauchsaugnapfes. Die im Durchmesser 106—133 μ große Hoden nehmen die Seitenpartien des Körpers im Bereich des Bauchsaugnapfes ein, und zwar der linke mehr kaudal als der rechte. Samenleiter röhrchenförmig. Der Keimstock liegt hinter dem Bauchsaugnapf und hinter den Hoden. Er ist etwas kleiner als die Hoden und erreicht im Durchmesser 106—120 μ. Von ihm führt ein kurzer Eileiter zum 60 μ großen Mehlis'schen Körper, von dem der die ganze zweite Körperhälfte ausfüllende Uterus weiter verläuft. Der Uterus überdeckt die Dotterstöcke und das Exkretionssystem.

Die Äste des Exkretionssystems ziehen von der Mündung zu den V-förmigen Hoden.

Die Dotterstöcke befinden sich unterhalb der Hoden und bilden unregelmäßige aus 8—9 Follikeln bestehende Gruppen. Die Eier sind oval, dünnwandig, gelblich und messen 16 × 8 μ.

Nach der Untersuchung der Morphologie und Bewertung der metrischen Verhältnisse bei unseren Exemplaren stellten wir fest, daß diese der Art *Lecithodendrium (Lecithodendrium) macrostomum* (Ozaki, 1929) am meisten ähnlich sind, sich jedoch mit der letzteren nicht identifizieren lassen.

Die angeführten topographischen und metrischen Unterschiede erlauben den beschriebenen Trematoden, den ich zu Ehren meines Lehrers, des korrespondierenden Mitglieds der SAW Ján Hovorka *Lecithodendrium (Lecithodendrium) hovorkai* sp. n. benenne, als eine neue Art anzusehen.

Fundorte von Fledermäusen: Demänová, Grotte Suchá (ČSR).

Lecithodendrium (Lecithodendrium) macrostomum Ozaki, 1929	*Lecithodendrium (Lecithodendrium) hovorkai* sp. n.
Cuticula with hooks	Cuticula without hooks
Abdominal sucker 45 μ	Abdominal sucker 112—146 μ, i.e. 2,4 to 3,2 × greater
Intestinal branches are 120—180 μ long and 70—80 μ wide	Intestinal branches are 52 μ long and 33 μ wide, i. e. 2,3—3,4 × smaller and 2,1 × narrower
The burza lies over the abdominal sucker, does not reach the bifurcation directly, is elliptic and measures 110—300 × 70—100 μ	The bursa lies directly beneath the bifurcation (fig.), is spherical and measures 112—150 μ
The ovary does not touch the abdominal suckers, nor the testes; it measures 100—130 μ	The ovary touches the abdominal suckers and the left testis, measures 106 to 120 μ. Both correspond as to size, but not as to topography
The genital organs are situated in the second half of body length	The genital organs are situated in the first half of the second third of body length
Uterus is rarely ligamentous and is situated only in the last third of body length	Uterus is compact with signs of ribbons (ligaments) and fills the whole second body half
The other organs not mentioned here correspond in size and situation	

1. *Lecithodendrium* (*L.*) *havockai* Mituch. 1959

Ich habe sie bei *Rhinolophus hipposideros* festgestellt (Ext. 180/2, Int. 1 – 8 Ex.) aus Lokalitäten: Demänová (1/8), Bystrá (1/1).

Sie kam einmal mit *Mesotretes peregrinus* und einmal mit *Lecithodendrium* (*L.*) *mödlingeri* vor.

From Mituch, 1964

Lecithodendrium kikugasira Ogata, 1939

syn. Prosthodendrium (P.) yamizense (Ogata, 1939)

Dubois, 1960, *P. (P.) yamizense* (Ogata 1939) a comme synonyme *Lecithodendrium kikugasira* Ogata 1939 (cf. Dubois 1960, pp. 31, 32).

From Dubois, 1963

Lecithodendrium (L.) linstowi Dollfus, 1931 (Fig. 2A, B)

Syn.: *Distoma ascidia* Linstow, 1884, 1887 et Looss, 1894, 1898 nec Van Beneden, 1873; *Lecithodendrium lagena*, Mödlinger, 1930; *Mesodendrium mödlingeri* Pande, 1935; *Lecithodendrium (L.) mödlingeri* (Pande, 1935); *Lecithodendrium breckendridgei* Macy, 1936; *L. linstowi* Dollfus, 1931; *L. granulosum* Ryšavý, 1956 nec Looss, 1907; *L. minutum* Gupta et Bhardwaj, 1958; *L. granulosum* Soltys, 1959 nec Looss, 1907 *L. ryszavyi* Dubois, 1960.


A

Hosts:

Rhinopoma microphyllum Brünnich, *Megaderma lyra lyra* Geoffr., ***Rhinolophus hipposideros hipposideros*** Bechst., ***Rhinolophus ferrumequinum ferrumequinum*** Schreb., *Asellia tridens tridens* Geoffr., *Myotis mystacinus mystacinus* Kuhl, *Tadarida taeniotis taeniotis* Rafinesq., *Myotis emarginatus emarginatus* Geoffroy, *Myotis myotis myotis* Borkh., *Myotis daubentoni daubentoni* Kuhl, *Myotis dasycneme dasycneme* Boie, *Vespertilio murinus murinus* Linné, *Eptesicus nilssoni nilssoni* Keyser. et Blas., *Eptesicus serotinus serotinus* Schreb., *Nyctalus leisleri leisleri* Kuhl, *Nyctalus noctula noctula* Schreb., *Pipistrellus pipistrellus pipistrellus* Schreb., *Pipistrellus nathusii* Keyser. et Blas., *Pipistrellus kuhli kuhli* Kuhl, *Pipistrellus subflavus* Cuvier, *Scotophilus heathi heathi* Horsf., *Plecotus auritus auritus* Linné, *Miniopterus schreibersi schreibersi* Kuhl.

Distribution:

Germany, Belgium, Spain, France, Hungary, Italy, Poland, Switzerland, Czechoslovakia (Europe); Cairo, Egypt (Africa); Allahabad, India (Asia).

In Czechoslovakia it has been found by Ryšavý, 1956 in *R. hipposideros*, *R. ferrumequinum*, *M. myotis*, *E. serotinus* and in *M. schreibersi* in Central-Bohemian, Moravian and South-Slovakian Karst.

My material including 558 specimens from 16 host species from 30 localities:

R. hipposideros: Znojmo-castle, 2. I. 56 — 2 specimens.

R. ferrumequinum: Ludmila cave, (Rožňava d.), 11. XII. 56 — 5 specimens, Drienovec cave (Košice d.), 3. III. 63 — 11 specimens.

+*R. euryale*: Ardov cave (Rožňava d.), 6. II. 58 — 4 specimens.

M. mystacinus: farm Šaloun (Jindř. Hradec d.), 26. VIII. 57 — 6 specimens; Černé jezero na Šumavě, 3. IX. 57 — 41 specimens; Karlštejn-gallery (Beroun d.), 27. X. 57 — 2 specimens; Bílá Desná (Jablonec upon Nisa d.), 24. II. 58 — 5 specimens; Demänovská dráči ice-cave (Lipt. Mikoláš d.) — 3 specimens.

M. emarginatus: Jevišovice (Znojmo d.) 14. . 1962 — 1 specimen.

+*M. nattereri*: Karlštejn — America gallery (Beroun d.), 26. X. 56 — 3 specimens; Bílá Desná (Jablonec upon Nisa d.), 24. II. 58 — 6 specimens; Srbsko-galleries (Beroun d.), 15. III. 59 — 1 specimen.

M. myotis: Čertova diera cave (Rožňava d.), 6. II. 58 — 1 specimen;*) Rožňava, II. 55 — 5 specimens.

M. daubentoni: Loubi near Děčín, 9. IV. 58 — 2 specimens.

V. murinus: Rábi-castle (Klatovy d.), 16. I. 58 — 2 specimens.

E. nilssoni: Bílá Desná (Jablonec upon Nisa d.), 24. II. 58 — 52 specimens; gallery near Suchá Rudná (Bruntál d.), 30. I. 59 — 2 specimens; Demänovská dráči ice-cave (Lipt. Mikoláš d.), 14. II. 61 — 5 specimens.

E. serotinus: Kečov-gallery (Rožňava d.), 10. XII. 56 — 22 specimens; Znojmo castle, 3. VIII. 57 — 1 specimen; Srbsko (Beroun d.), 1. XII. 57 — 1 specimen; Lenešice (Louny d.) 18. V. 1959; cave of Lažianský near Červená Skála, 15. II. 61 — 25 specimens; cave of Driny (Trnava d.) — 29 specimens.

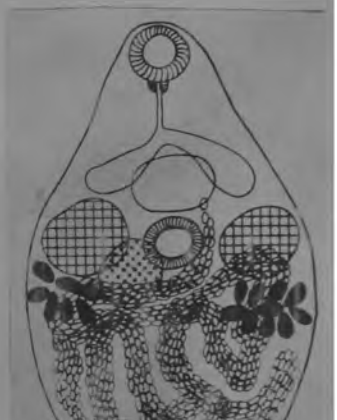
N. noctula: Potěšil fish-pond (Jindř. Hradec d.), 26. V. 59 — 2 specimens.

P. pipistrellus: Horšovský Týn (Domažlice d.), 29. XII. 56 — 24 specimens; Vranov upon Dyje (Znojmo d.), 22. I. 58 — 32 specimens; Šternberk-church (Olomouc d.), 30. I. 59 — 2 specimens; Lázně sv. Trojice (Jičín d.), 21. IV. 59 — 13 specimens; Drienovecká vyvěračka (Košice d.), 17. II. 61 — 5 specimens.

P. auritus: Pěčice — Kačerovna (Ml. Boleslav d.), 16. VIII. 57 — 10 specimens; Bílá Desná (Jablonec upon Nisa d.), 24. II. 58 — 1 specimen; Lidečko (Gottwaldov d.), 5. VI. 59 — 2 specimens; Bechyně-castle (Tábor d.), 31. I. 61 — 6 specimens.

+*P. austriacus*: Domažlice, 12. I. 58 — 8 specimens.

M. schreibersi: Čertova diera cave (Rožňava d.), 6. II. 58 — 164 specimens;*) Rožňava II. 55 — 10 specimens; Domica-cave (Rožňava d.), XII. 55 — 8 specimens.


B

Description (based on 80 specimens): Body length 0.378 to 1.170 mm., body width 0.198 to 0.630 mm. Oral sucker diameter: 0.045 to 0.099 (most

*) Ryšavý's material.

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frequently 0.063 to 0.072 mm.), ventral sucker diameter 0.045 to 0.108 mm. (most frequently 0.054 to 0.063). Ratio of oral sucker to ventral sucker diameter 0.70 to 1.57. (Ratio 1.0 in 32 p.c., ratio higher than 1.0 in 40.6 p.c., ratio lower than 1.0 in 27.2 p.c.). Left testis 0.080 to 0.171 by 0.060 to 0.126 mm., right testis 0.081 to 0.180 by 0.063 to 0.135 mm. Ovary 0.063 to 0.100 by 0.081 to 0.153 mm. Eggs 0.016 to 0.022 mm. by 0.008 to 0.012 mm.

Small flukes of a fusiform, eggform to widely rounded body with a smooth cuticle. The first third of body containing numerous cuticular glands. Both suckers round, the oral one more frequently larger than the ventral (40 p.c.), often both suckers of equal sizes (32.2 p.c.), less frequently the ventral one larger (27.2 p.c.). Farynx small, esophagus thin and long, dividing into two short ceca. Copulatory bursa oval, relatively large situated between ceca and the ventral sucker. Ventral sucker lying medially most frequently a little in front of a half of body length, or just at a half or slightly behind it. Testes large, oval or round, extending prae-or paraacetabularly. Ovary of irregular shape, smaller than testes on average, lying slightly right to the ventral sucker

Table I. Comparison of characters of synonymical species *L. granulosum* Ryšavý, 1956, *L. linstowi* Ryšavý, 1956, *L. granulosum* Soltys, 1959, *L. linstowi* Soltys, 1959 and *L. (L.) linstowi* Dollfus, 1931

	Ryšavý, 1956		Authoress's measurement		Soltys, 1959	
	L. granulosum	*L. linstowi*	in Ryšavý's material	in own material	*L. granul.*	*L. linstowi*
b. l.	0.650—0.740	0.545—0.719	0.458—0.729	0.378—1.170	—	—
b. w.	0.320—0.400	0.345—0.398	0.243—0.450	0.198—0.630	—	—
oral s.	0.063—0.076	0.058—0.068	0.063—0.081	0.045—0.099	larger, equal or smaller than the ventral s.	
vent. s.	0.043—0.049	0.068—0.079	0.045—0.072	0.045—0.108	—	—
testes	—	—	—	0.080—0.180/ 0.060—0.135	—	0.068—0.100
ovary	—	0.054—0.059	—	0.063—0.100/ 0.081—0.153	between the vent. s. and the right testis	—
eggs	0.016—0.019/ 0.013—0.015	0.024—0.027/ 0.011—0.015	0.018—0.020/ 0.008—0.010	0.016—0.022/ 0.008—0.012	— —	— —

paraacetabularly or partially postacetabularly. All reproductive organs much larger than the ventral sucker. Just behind testes, reaching them, two lateral groups of vitellaria containing most frequently 9 glands on the right side and 7 on the left. Rates of 8 and 7,10 and 10,9 and 9,10 and 8,12 and 10, 11 and 9,11 and 8,12 and 9 glands have also been ascertained. Uterus filling the posterior part of body behind the ventral sucker, covering ventrally vitellaria, but not so densely folded like in *L. granulosum*.

Having examined and measured 23 specimens of Ryšavý's material, regraded as *L. linstowi* and *L. granulosum*, I came to the conclusion that both [illegible] identical and are identical with *L. (L.) linstowi* Dolltus 1931 [illegible] ym of which they should be regarded. Therefore also *L. (L.) ry-* [illegible] ois 1960, which was described on the basis of Ryšavý's record on *L.* [illegible] *linstowi* has to be considered as a synonym of *L. (L.) linstowi* Dolltus [illegible] See Table I.

As co[illegible]ied to Soltys's records on *L. linstowi* and *L. granulosum*, his figures f[illegible]oth species suggest, that the author was influenced evidently by Ryš[illegible]ý's record from Czechoslovakia and dealt in fact with *L. (L.)* linstowi Dolltus 1931 in both cases. See Table I.

From Hürkova, 1963

Lecithodendrium (Lecithodendrium) linstowi Dollfus 1931.

[Syn. *Distoma ascidia* Linstow 1884, 1887, et Looss 1894, 1898 *nec* Van Beneden 1873;
Lecithodendrium lagena Mödlinger 1930 *nec* Brandes 1888;
Mesodendrium mödlingeri Pande 1935;
Lecithodendrium (Lecithodendrium) mödlingeri (Pande 1935) *in* Dubois 1960, 1961;
Lecithodendrium breckenridgei Macy 1936;
Lecithodendrium granulosum Ryšavý 1956 *nec* Looss 1907;
Lecithodendrium minutum Gupta et Bhardwaj 1958;
Lecithodendrium (Lecithodendrium) bovorkai Mituch 1959.]

80 exemplaires environ ont été récoltés dans deux *Nyctalus lasiopterus* (Schreber) capturés par V. Dorka (Observ. Ornith. Alpin) au Col de Cou, sur Champéry, Valais, le 1.X.1962 (Mus. Genève 1010.56 et 1010.57). L'un des hôtes hébergeait en outre *Plagiorchis vespertilionis* et *Prosthodendrium chilostomum*; l'autre, *Plagiorchis asper* et *Prosthodendrium chilostomum*.

Les mesures prises sur ces deux lots sont:

Longueur: 0,74-1,05 mm; largeur: 0,30-0,50 mm.

Diamètres de la ventouse buccale: 57-70/63-70 µ; de la ventouse ventrale: 63-78/73-84 µ; du pharynx: 29-42/37-42 µ; de l'ovaire: 105-115/120-135 µ; des testicules: 105-150/105-190 µ; de la masse prostatique: 90-130/90-150 µ; des œufs: 16-18/9-11 µ; des follicules vitellogènes: 45-52 µ. Longueur de l'œsophage: 110-180 µ; des caeca: 110-190 µ; Situation de la ventouse ventrale: 36-51/100 (moyenne 44/100) de la longueur du corps; des testicules: 38-48/100 (moyenne 44/100).

Fig. 2.
Lecithodendrium (Lecithodendrium) linstowi Dollfus (= *mödlingeri* Pande) de *Nyctalus lasiopterus* (Schreber).
Vue dorsale.
Longueur: 0,86 mm.
Mus. Genève 1010.56.

Un autre exemplaire de cette espèce figurait parmi les *Prosthodendrium (P.) ascidia* trouvés dans le *Myotis mystacinus* (Kuhl) de la Grotte aux Fées, Vallorbe, canton de Vaud, 8.X.1961 (Mus. Genève 986.6).

Ces Vers (fig. 2) sont caractérisés par leur corps ovoïde ou piriforme, parfois allongé, par le nombre de follicules vitellogènes (invariablement 7 à gauche, 9 à droite), par la subégalité et le faible diamètre des ventouses, la petitesse du pharynx, et par le fait que la ventouse buccale peut être rétractée et comme avalée plus ou moins profondément. Cette particularité avait été observée par von Linstow (1884, fig. 25) pour son « *Distomum ascidia* van Bened. »; elle a été constatée par Dollfus (1961, fig. 6) pour son *Lecithodendrium linstowi* qui n'est que le *nomen novum* du premier [1] (cf. Dollfus 1937, p. 5).

Ainsi se précise l'analogie de *linstowi* et de *mödlingeri*: l'un que nous avions considéré comme *species incerta* (cf. Dubois 1960,

[1] Les mesures indiquées par Dollfus (1961, p. 181) pour *L. linstowi* correspondent bien à celles que von Linstow (1884, pp. 140-141) donnait pour son *D. ascidia*.

-OVER-

pp. 17, 56 et 74), l'autre redécrit (*ibid.*, pp. 17-21) et substitué au précédent pour supprimer une équivoque résultant de la méconnaissance par Looss (1894, 1898, 1899 et 1907) du vrai *ascidia* Van Beneden et de la confusion consécutive à l'emploi de cette appellation pour désigner deux espèces distinctes [1]. Désormais *linstowi* (syn. *modlingeri*) désignera le parasite commun des Pipistrelles, Minioptères, Vespertilions et Murins, Sérotines, Noctules et Rhinolophes d'Eurasie (et même d'Amérique du Nord), dont les vitellogènes posttesticulaires sont composés typiquement de 7 follicules à gauche et de 9 à droite (cf. DUBOIS 1960, fig. 4).

Nous considérons le *Lecithodendrium (L.) hovorkai* Mituch 1959, de *Eptesicus nilssoni* (Keys. et Blas.) [3 cas d'infestation], *E. serotinus* (Schreb.) [1 cas] et *Myotis mystacinus* (Kuhl) [1 cas], comme synonyme de *L. (L.) linstowi*. Il provient de Tchécoslovaquie (Demänovà, Grotte Suchá). Selon MITUCH, ses vitellogènes sont composés de 8 à 9 follicules; le pharynx mesure 39-53 μ de diamètre.

Dubois - 1963

[1] Comme l'a rappelé DOLLFUS (1937, p. 15), Looss appliqua ce nom successivement à deux espèces, l'une (*D. ascidia* Looss 1894) qu'il trouva en Allemagne chez *Pipistrellus pipistrellus* (Schreb.) [et que von LINSTOW avait décrite (1884) puis retrouvée (1887); hôtes respectifs *P. pipistrellus* et *P. nathusii* (Keys. et Blas.) provenant également d'Allemagne] et qui correspond à *Lecithodendrium linstowi*; l'autre (*D. ascidia* in Looss 1899 = *lageni* Brandes 1888 nom. nov.) qui devint le *Lecithodendrium granulosum* Looss 1907, d'Égypte (hôte: *Pipistrellus kuhli*) et que l'auteur allemand choisit comme type générique (cf. Looss 1899, p. 609; DOLLFUS, *op. cit.*, p. 7; DUBOIS 1960, pp. 55, 60, 74).

Lecithodendrium linstowi Dollfus, 1931

Chez *Eptesicus nilssoni* provenant de Vallorbe (VD) et du col de Bretolet (VS); chez *Plecotus auritus*, du col de Bretolet également.

From VAUCHER AND HUNKELER, 1967

Lecithodendrium (Lecithodendrium) minutum
N. K. Gupta & Bhardwaj, 1958

Host: Lyroderma lyra (Geoffroy), bat; intestine
Loc.: Gurdaspur, Punjab, India
Ref.: Res. Bull. Panjab Univ. #141, 1958 (in Ag. Zo. EOS Ea 77A)

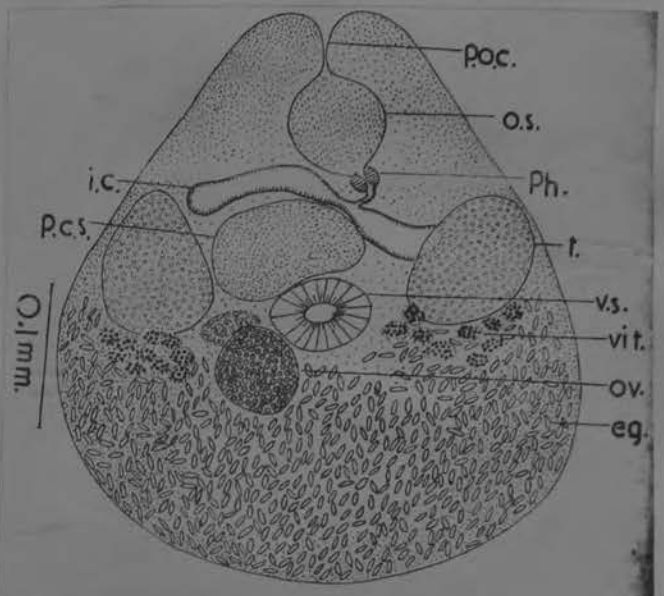


FIG. 1. Ventral view of *Lecithodendrium* (*Lecithodendrium*) *minutum* n.

2. *Lecithodendrium* (*L.*) *mödlingeri* Ozaki, 1929 From Mitoch, 1964

Ich fand sie bei *Rhinolophus hipposideros* (Ext. 180/1, Int. 8 Ex.) aus der Lokalität Demänová und bei *Rhinolophus ferrum equinum* (Ext. 96/9, Int. 1 – 7 Ex.) aus Lokalitäten Jasov (5/14), Drienovec (3/3), Veľká Lodina (1/7).

Diese typische Art der Gattung *Lecithodendrium* Looss, 1896 beschrieb Linstow (1884) als *Distoma ascidia*. Sie unterscheidet sich von der ursprünglich von Van Beneden (1873) unter diesem Namen beschriebenen Art durch Unterbringung der Dotterstöcke; auf Grund dessen hat Dollfus i. J. 1931 die Van Benedensche Art in die Gattung *Prosthodendrium* umgeordnet und die ursprünglich von Linstow beschriebene Art bezeichnete er als *Lecithodendrium linstowi*. Dubois (1960) betrachtet die Art *Lecithodendrium* (*L.*) *linstowi* als unsichere Spezies (sp. incerta) und die seinerseits unter dem Namen *Lecithodendrium* (*L.*) *linstowi* (1955, Seite 473; 1956, Seite 686) beschriebenen Arten betrachtet er als die Art *Lecithodendrium* (*L.*) *mödlingeri* Ozaki, 1929. Der Standpunkt von Dubois (l. c.) ist meines Erachtens richtig und ich betrachte alle Arten, die Dubois i. J. 1960 als Synonyme bezeichnete, auch als solche.

Auf Grund der Größe und des Verhältnisses des Mundsaugnapfs zum Bauchsaugnapf scheint es, als könnte man diese Art in einige Spezies teilen, wie dies in der Vergangenheit geschah. In der Arbeit bemühte ich mich dieses Problem anhand breiteren Materials aus Fledermäusen zu lösen und gelangte zur Schlußfolgerung, daß es nicht begründet erscheint, das System um weitere Arten zu vermehren. In meinem Material kamen nämlich Exemplare von Trematoden vor, die ein unterschiedliches Verhältnis des Mund- zum Bauchsaugnapf hatten und Unterschiede gibt es auch in der Anzahl der Follikel. Ich sehe jedoch keinen Grund, daß Abweichungen dieser Art bei der allgemein bekannten Instabilität der diagnostischen Merkmale der Trematoden als Basis für eine Festlegung neuer Arten genommen werden, zumal sie lediglich als Abweichungen im Rahmen der Variationsbreite zu bewerten sind.

Ich habe die Helminthe einmal in reiner Invasion festgestellt, 6mal mit der Art *Prosthodendrium* (*P.*) *chilostomum*, 2mal mit *Strongylacantha glycirrhiza* und je einmal mit *Mesotretes peregrinus*, *Plagiochis* (*P.*) *vespertilionis*, *Lecithodendrium* (*L.*) *horvathi*, *Prosthodendrium* (*P.*) *ascidia*, *Prosthodendrium* (*P.*) *carolinum*, *Prosthodendrium* (*P.*) *erhardovae* und *Pycnoporus heteroporus*.

5. *Lecithodendrium urna* n. spec. Looss, 1907

Fig. 5.

In der ersten Hälfte des Darmes von *Vesperugo kuhli*, Cairo.

Erwachsene Tiere haben im konservierten Zustande gedrungene Birnform mit etwas verjüngtem Kopfteile und breit abgerundetem Hinterende. Die Länge beträgt 0,5—0,55 mm, die größte Breite 0,3—0,33 mm und die größte Dicke ebenfalls 0,3 mm. Die Haut ist eigentlich unbewaffnet, an ihrer Oberfläche aber in zahllose feinste, nach hinten gerichtete Spitzchen zerfallen. Diese beginnen klein etwas hinter dem Mundrande, nehmen dann schnell ihre volle Größe an und verschwinden gegen das Hinterende zu allmählich wieder. Der Mundsaugnapf besitzt einen Durchmesser von 0,06—0,07 mm; der Bauchsaugnapf ist bedeutend kleiner und in konservierten Individuen meist queroval, 0,05—0,055 mm breit, aber nur ca. 0,04 mm lang. Er liegt dann auch nicht frei an der Körperoberfläche, sondern am Grunde einer kleinen spaltförmigen Vertiefung, die ihre Entstehung aber wohl nur der Kontraktion des Körpers bei der Konservierung verdankt; die Lecithodendrien vermögen bekanntlich ihre Saugnäpfe sehr weit in den Körper zurückzuziehen.

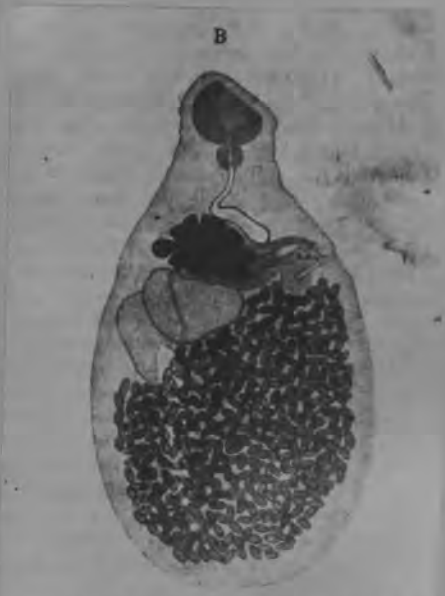
Die Einsenkung ist in Fig. 5 A nicht angedeutet, hingegen in Fig. 5 B deutlich zu erkennen. Der Pharynx, vom Mundsaugnapfe durch einen kurzen Präpharynx getrennt, hat einen Durchmesser von 0,03—0,033 mm; der dünne Oesophagus von reichlich doppelter Länge des Pharynx biegt (in konservierten Individuen) nach der Dorsalseite ab und [illegible] in die [illegible]

Fig. 5. *Lecithodendrium urna* n. sp. ca. 160.

großen Prostataapparatcomplexes sich wieder bauchwärts wenden und (von der Bauchseite gesehen) noch vor dem Vorderende des Bauchsaugnapfes enden (Fig. 5 B). Die Exkretionsblase hat die für die Lecithodendrien charakteristische V-Form; ihre Schenkel reichen nach vorn bis dicht an die Hoden heran.

Der Genitalporus liegt median dicht vor dem Bauchsaugnapfe, bei konservierten Individuen aber nicht frei auf der Körperfläche, sondern in der vorderen Wand der oben erwähnten Einsenkung. Er führt in einen kurzen unpaaren Gang, aus dem sich dann nach der linken Seite das Metraterm isoliert. Der Austrittsstelle des letzteren gegenüber ist die Wand des Ganges in ein kissenartiges, anscheinend muskulöses Organ von unbekannter Bedeutung differenziert, welches mehr oder weniger weit in das Lumen des Ganges vorspringt (in Fig. 5 A auf der linken Seite, in Fig. 5 B unten erkennbar; ihm gegenüber liegt die Austrittsstelle des Metraterms). Der Ductus ejaculatorius erweitert sich bald zu einer wohldifferenzierten Pars prostatica; sie ist zusammen mit der langen und mehrfach aufgeknäuelten Samenblase von zahlreichen Prostatazellen umgeben und durch die übliche Parenchymlamelle als cirrhusbeutelähnlicher Körper gegen das Parenchym abgegrenzt. Bei konservierten Individuen steigt dieser Körper ziemlich gerade nach dem Rücken auf und reicht bis in die Nähe der Rückenfläche (Fig. 5 B). Die großen, ihrer Form nach meist abgerundet dreieckigen Hoden liegen in den Seiten, mit ihren Vorderrändern auf der Höhe des Bauchsaugnapfes. Der ebenfalls große, ovale oder birnförmige Keimstock findet sich ungefähr median ganz dorsal, und ist deshalb bei konservierten Tieren von der Bauchseite aus nicht zu sehen (Fig. 5 A). Schalendrüsenkomplex hinter ihm, Laurerscher Kanal und Receptaculum seminis wegen der Dicke der Tiere nicht mit Sicherheit zu erkennen, aber zweifellos vorhanden. Die traubenförmigen, aus wenigen, großen Follikeln zusammengesetzten Dotterstöcke liegen in den Seiten dicht vor den Hoden; ihre Dottergänge gehen schräg nach hinten (in Fig. 5 B unter dem rechten Hoden sichtbar), ungefähr der Rückenfläche parallel.

Bei reifen Tieren ist der ganze Körperraum hinter den Hoden von den Uterusschlingen, resp. Eiern angefüllt, nur die vorderen Enden der Exkretionsblasenschenkel bleiben frei. Die blaßbraunen, dünnschaligen Eier sind 0,024—0,026 mm lang und 0,013—0,015 mm breit.



A vom Bauche, B von der rechten Seite; Vergr.

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P. (Prosthodendrium) urna (Looss, 1907)

Found twice in Egypt with three specimens from *Rhinolophus clivosus brachygnathus*, Giza Pyramid, June 18, 1951; and nine from *Taphozous perforatus* from caves at edge of Faiyum, January 23, 1950. Five additional examples were in *Rhinolophus clivosus acrotis* from a house at Ta'izz, Yemen, January 21, 1951; 30 were from *Pipistrellus sp.* and *Rhinolepis blasii* in and near Sana', February 14-16, 1951.

In this species the ventral sucker is a little smaller than the oral sucker and a small number of vitelline follicles are situated near the end of the ceca. The position of the ventral sucker seems to be somewhat variable; Looss (1907) illustrated it as being at the level of the anterior margin of the testes, whereas in our specimens, it could also be found near the level of the posterior part of the testes.

FROM MACY, HEYNEMAN + KUNTZ, 1961

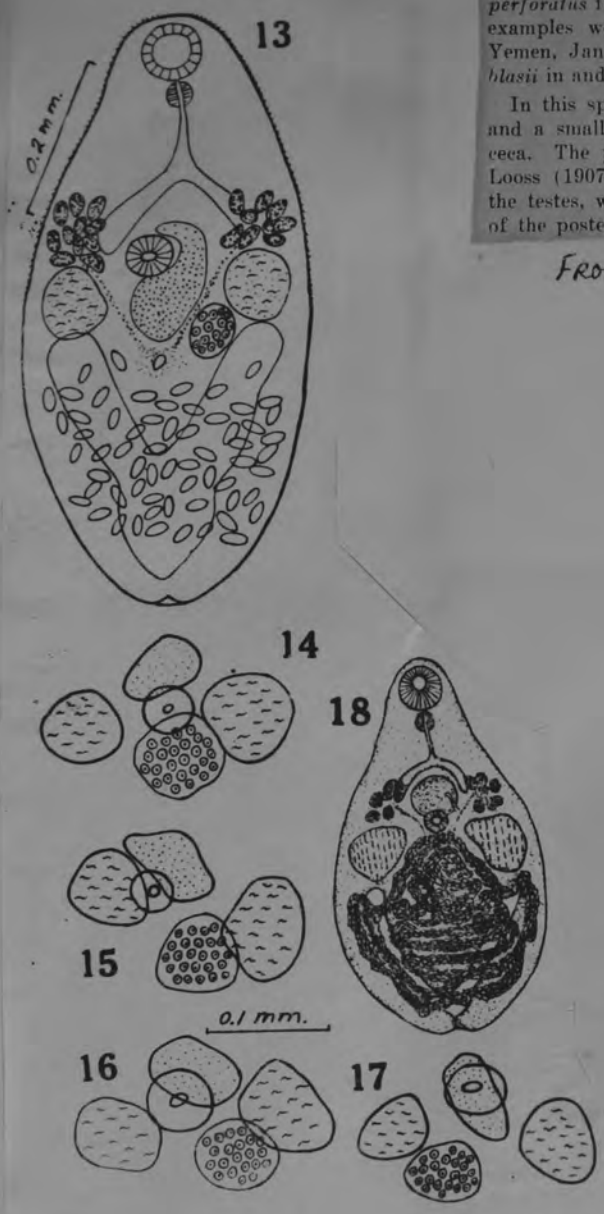

圖 版 說 明

圖 13　*P. urna* 背面觀。請與圖 18 及 19 作比較。圖 18 爲 Looss 原作之 *urna* 。圖 19 爲 Pande 之 *loostii*。後者爲 *P. urna* 之同種異名。

圖 14—17　*P. urna* 的假陰囊囊的各種位置(根據我們的標本)。圖 14 示 *urna* 型，異於圖 13 的 *loostii* 型。圖 15—17 爲此二者的中間型。

圖 18　*P. urna* 仿 Looss (1907)。

from Chen, 1954

LECITHODENDRIUM

LOOSE LEAF
ORGANIZER

SCHEDULE

PERIOD OR TIME								
COURSE **MON.** INSTRUCTOR								
COURSE **TUE.** INSTRUCTOR								
COURSE **WED.** INSTRUCTOR								
COURSE **THU.** INSTRUCTOR								
COURSE **FRI.** INSTRUCTOR								
COURSE **SAT.** INSTRUCTOR								

NAME _____

ADDRESS _____

SCHOOL _____ TELEPHONE _____

Moved to Lecithodendriidae

Dicrocoeliidae

Acanthatrium, Faust, 1919

Small- sized Brachycoeliinae, spherical to pyriform, with a genita l atrium lined with numerous integumentary spines; prostate glands numerous; testes preacetabular, in a plane with the genital pore; vitellari anterior to the digestive ceca; excretory system with four groups of flame cells of three each for each half of the body; in intestine of bats.

Type species: A. nycteridis

THE STATUS OF ACANTHATRIUM FAUST, 1919 AND RELATED GENERA

Dollfus (1937) discussed at some length the confusion then existing among certain genera and sub-genera (*Lecithodendrium* Looss, 1896; sub-genus *Lecithodendrium* Odhner, 1911; *Acanthatrium* Faust, 1919; *Mesodendrium* Faust, 1919; *Prosthodendrium* Dollfus, 1931; and the sub-genus *Paralecithodendrium* Odhner, 1911. Dollfus's move in establishing the genus *Prosthodendrium* and naming *L. linstowi* (syn. *L. ascidia* of Looss, *nec* Van Beneden) appears to be sound for the following reasons: When Van Beneden (1873) named *"Distomum ascidia"* from various bats in Belgium, he described and figured it as a species with vitellaria far forward in the pharynx region. Von Linstow (1884) recorded what he thought to be the same species but in his specimens the vitellaria were posttesticular. Looss (1894) also identified species with posttesticular vitellaria as being *"D. ascidia."* He later (1898, p. 455) expressed the belief that Van Beneden had mistaken gland cells as vitellaria. This view was apparently shared by Lühe (1909).

The genus *Lecithodendrium* was named by Looss 1896 (p. 86) without designation of type species. In 1899, Looss designated *"D. ascidia* Van Beneden, 1873" as type species. As Dollfus (1937) has pointed out in detail, Looss clearly indicated at various times that what he considered to be *"D. ascidia* Van Beneden" was the *D. ascidia* Van Beneden of Von Linstow, a misidentification.

Dollfus (1931) named the genus *Prosthodendrium* for the true *D. ascidia* Van Beneden, 1873, accepting *Lecithodendrium* Looss, 1896 for species with posttesticular vitellaria. From the viewpoint of taxonomy, there are clearly two genera. The problem of nomenclature is more difficult. Dollfus explained his solution in detail (Dollfus, 1937). While the original Rules of Nomenclature appear to establish the designated type species as dictating the characteristics of a nominal genus regardless of what was in the mind of the author, changes adopted at the Copenhagen meetings give support to Dollfus. The Copenhagen Decisions on Zoological Nomenclature (1953) include a statement (p. 69; paragraph 168 (1)) that a generic name based on a nominal species as type but indicated to refer actually to a taxon erroneously identified with the nominal species (in this case the taxon is the *"D. ascidia"* of Von Linstow), the type species is not to be the one cited by the author but the species misidentified by him. This recommendation appears to support the view of Dollfus that the *"D. ascidia"* of Von Linstow should be the type species of *Lecithodendrium*. The other possibility, that *Lecithodendrium* is a genus with anterior vitellaria, would necessitate a reversal of the two genera as used by recent authors (e.g. Macy, Dubois, Yamaguti), would cause numerous changes in names, and would compound the present confusion.

Dollfus (1937; p. 13) reduced *Mesodendrium* Faust, 1919 to synonymy with *Lecithodendrium* (*sensu* Dollfus).

Paralecithodendrium Odhner, 1911 is a sub-genus of *Prosthodendrium*.

In 1919, Faust named the genus *Acanthatrium* for lecithodendrids with spines in the genital atrium, with *A. nycteridis* as type species. This genus possesses pretesticular vitellaria and is differentiated from *Prosthodendrium* only by its spinuous genital atrium.

Lecithodendrium japonicum Yamaguti, 1939 has posttesticular vitellaria but also spines in the genital atrium. Skarbilovich (1948)[1] moved this species to the genus *Acanthatrium*, naming for it the sub-genus *Mesothatrium*. It is like *Acanthatrium* in its spined atrium, but differs in its posttesticular vitellaria. Since this latter character appears to be of generic value in this group of trematodes, the subgenus *Mesothatrium* should be raised to generic rank. *Acanthatrium* (*Mesothatrium*) *japonicum* (Yamaguti, 1939) Skarbilovich, 1947 becomes *Mesothatrium japonicum* (Yamaguti, 1939) n. comb., and the type species of *Mesothatrium*.

The genera *Lecithodendrium*, *Mesothatrium*, *Acanthatrium* and *Prosthodendrium* may be keyed as follows:

Posttesticular vitellaria
- Aspinose genital atrium ..... *Lecithodendrium* Looss, 1896
- Spinose genial atrium ..... *Mesothatrium* Skarbilovich, 1948

Pretesticular vitellaria
- Aspinose genital atrium ..... *Prosthodendrium* Dollfus, 1931
- Spinose genital atrium ..... *Acanthatrium* Faust, 1919

FROM SOGANDARES-BERNAL, 1956

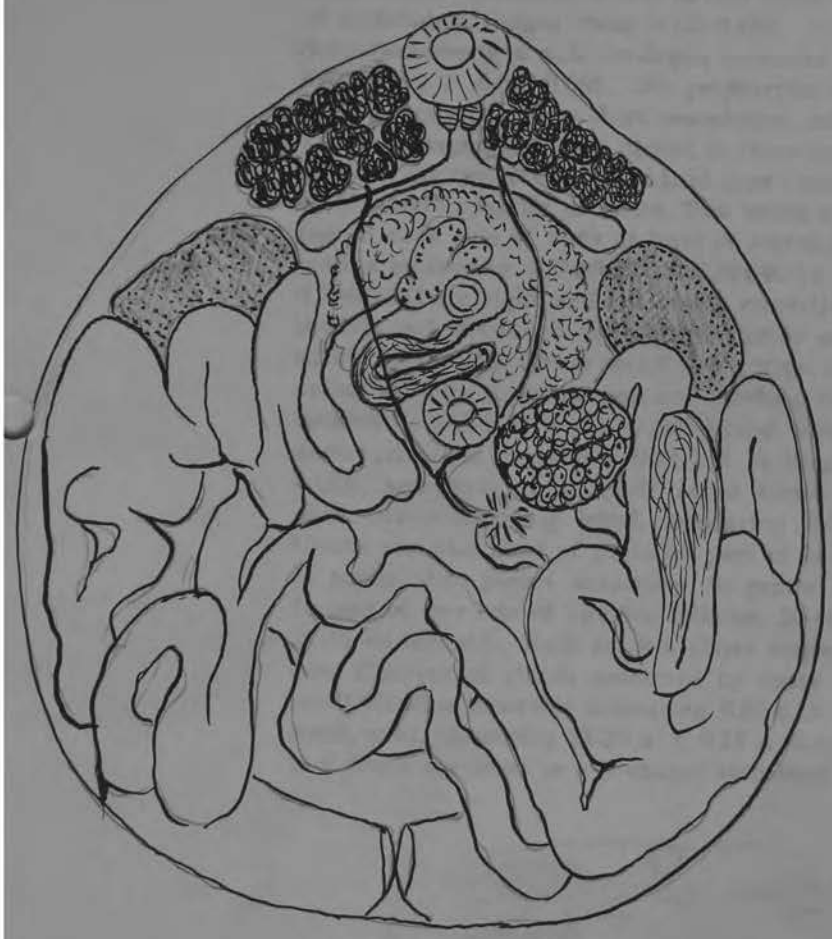

Fig 9
ATRIAL SPINES FROM TYPE
From MACY, 1940

Acanthatrium nycteridis Faust, 1919

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to Lecithodendriidae.

Acanthatrium aegyptiacus Saoud and Ramadan, 1980

2 *Acanthatrium (Paracanthatrium) aegyptiacus* n. sp. Eleven specimens were recovered from the small intestine of *Taphozous nudiventris nudiventris* collected from Soltan Barkouky Mosque at the Old City in Cairo and Abo Rawash, Giza Governorate. Body large, being wide oval, rounded or squarish in shape; measuring 0.69-1.34 long and 0.47-2.03 wide, and not covered with distinct tegumental spines. Oral sucker terminal ; measuring 0.089-0.151 × 0.085-0.169. Acetabulum lies in anterior part of middle third of body ; measuring 0.079-0.183 × 0.079-0.204. Distance between posterior border of oral sucker and anterior border of acetabulum ranges from 0.170-0.453. Following oral sucker dorso-posteriorly a well developed muscular pharynx measuring 0.036-0.099 × 0.037-0.085. No prepharynx was seen. Pharynx leads directly to a very short oesophagus, measuring 0.008-0.113. The oesophagus is almost absent in three specimens. Intestinal caeca of the typical lecithodendriid type ; running horizontally to reach anterior border of testes. Two testes symmetrical, situated one on each side of body at level of acetabulum with a smooth outline measuring 0.104-0.377 × 0.094-0.373, and 0.151-0.343 × 0.094-0.383 for right and left testes respectively. Receptaculum seminis well developed mainly posterior to acetabulum and measuring 0.07 × 0.6. Cirrus pouch fairly large and triangular originating anterior to acetabulum and reaching intestinal bifurcation, measuring 0.13-0.44 × 0.15-0.50. Genital atrium lies anterior to acetabulum and measuring 0.03-0.11 in length and 0.03-0.08 in width, and provided with 9-11 atrial spines of 4-8 u in length each. Ovary distinctly lobed, measuring 0.09-0.36 × 0.10-0.30. Uterus occupies most of posterior part of body. extends ventrad to testes, then passes anteriorly to genital atrium. Vitellaria formed of two sets of vitelline follicles, 20-40 on right side and 21-45 on left side. Each set lies above respective intestinal caecum. Clusters of glands connected by ducts together to form a small vitelline reservoir measuring 0.07-0.16 × 0.14-0.24. Eggs small, oval, measuring 21-30 u × 9.17 u. Excretory vesicle seen in a single specimen as a Y-shaped structure.

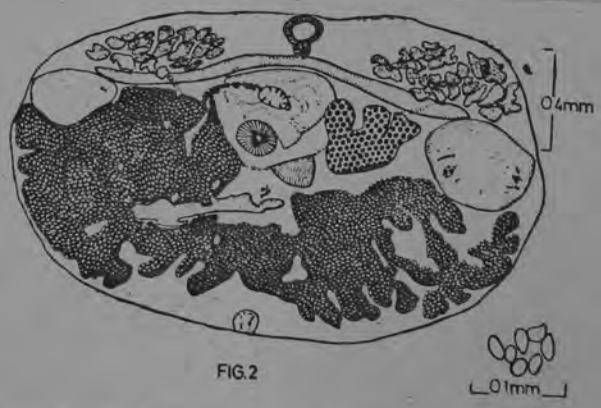
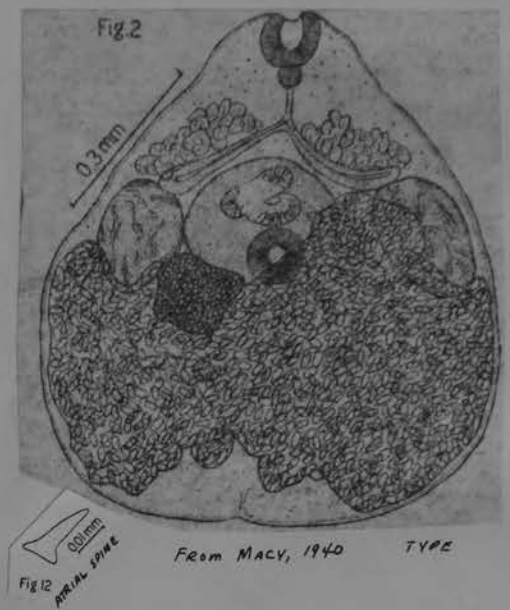


Fig. 2 : Acanthatrium (Paracanthatrium) aegyptiacus n. sp. Ventral View of Mature Worm and Eggs.

The shape of the ovary, being unlobed, distinguishes *Acanthatrium (A.) cahirinus* n. sp. as a member of the subgenus *Acanthatrium* Faust, 1919, while the lobed ovary clearly puts the other species, *Acanthatrium (P.) aegyptiacus,* in the subgenus *Paracanthatrium* Dubois, 1961.

Acanthatrium (P.) sphaerula (Looss, 1896) Faust, 1919 is the only species so far described from the subgenus *Paracanthatrium* Dubois, 1961 and *A. (P.) aegyptiacus* is the second member of the subgenus. The new species can be easily spearated from *A. (P.) sphaerula* on the following grounds : (1) The position of the ventral sucker, lying in a pre-equatorial position in the new species while it lies post-equatorially in *A. (P.) sphaerula.* (2) The eggs are smaller in *A. (P.) sphaerula,* measuring 19 u × 10 u, while in the new species they measure 21-30 u × 9-17 u.

Acanthatrium alicatai Macy, 1940



In a survey of larval trematodes infecting snails in the vicinity of Mountain Lake Biological Station, Mountain Lake, Virginia, 16 species of cercariae were encountered, some of which are probably not yet described. Among them, one minute virgulate xiphidiocercaria was found experimentally to be the larva of a lecithodendriid species belonging to the subgenus *Acanthatrium*. As adult worms reared experimentally in laboratory mice could not be allocated to any reported species, they are described here as *Prosthodendrium* (*Acanthatrium*) *anaplocami* n. sp.

LIFE HISTORY OF *Prosthodendrium anaplocami* ~~N. SP.~~

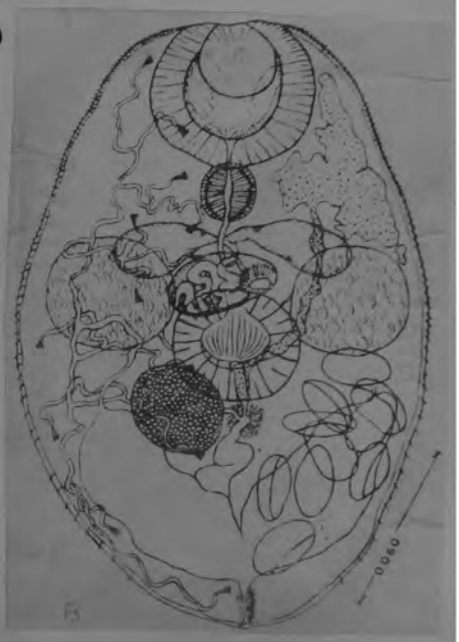
Etges, F. J. - 1960

Adult (Fig. B)

Based on whole mounts and in vivo studies of 19 worms from the small intestine of experimentally infected mice; all measurements below given in millimeters.

Body ovoid to pyriform, 0.130 to 0.320 long, 0.082 to 0.178 wide. Cuticular spines very small, scattered, extending almost to posterior end of body. Oral sucker antero-ventral, 0.035 to 0.062 in diameter. Prepharynx very short, often apparently absent; up to 0.004 long. Pharynx ovoid to subspherical; 0.012 to 0.021 long, 0.014 to 0.021 wide. Esophagus characteristically looped, 0.009 to 0.019 long. Ceca heavy walled, extending laterally toward testes, 0.024 to 0.038 long, 0.009 to 0.024 in greatest diameter. Acetabulum just posterior to midbody, between testes, often thrust forward and elevated; 0.026 to 0.042 in diameter. Testes subspherical, 0.027 to 0.042 in diameter, with vasa efferentia arising on antero-medial surfaces. Vas deferens very short, forming just at point of entry to prostatic mass. Seminal vesicle and ejaculatory duct coiled within prostate cell mass, 0.012 to 0.025 wide, 0.025 to 0.036 long, lying transversely between gut bifurcation and acetabulum. Wall of genital atrium muscular, armed with numerous slender spines, 0.005 to 0.016 long, directed toward genital pore at antero-sinistral margin of acetabulum. Ovary smooth, ovoid, intertesticular behind acetabulum, usually dextral, 0.022 to 0.037 long, 0.018 to 0.029 wide. Oviduct short, passing postero-medially to enter ootype. Vitellaria dorsal in antero-lateral fields which may meet in mid-line; small follicles arranged in branching cords; primary vitelline ducts pass posteromedially, joining to form vitelline reservoir just anterior to ootype lying just behind acetabulum. Seminal receptacle of uterine type, small, sinistral to ootype. Uterus thin-walled, its coils filling posterior third of body, terminating on left wall of genital atrium. Eggs operculated, unembryonated; 0.018 to 0.023 long, 0.009 to 0.014 wide. Excretory bladder thin-walled, bifurcated, often filling posterior third of body. Excretory duct short, with conspicuous sphincter, its pore in shallow depression at posterior end of body. Excretory tubules and flame cells of the Mesostoma type with the formula $2[(2+2+3)+(2+2+2)]$.

Holotype specimen: U.S. National Museum, Helm. Collection No. 39015.



Genre ACANTHATRIUM (*Prosthodendrium* Dollfus, 1931) Faust, 1919 (1)

Acanthatrium atrio-papillatum ~~n. sp.~~ CAPRON, DEBLOCK, AND BRYGOO, 1961

Hôtes et localisation géographique.

Chamaeleo oustaleti Mocquard : Doany, Andapa, Maroantsetra et Maevatanana. (MADAGASCAR)

Chamaeleo verrucosus Cuvier : Mandritsara, Antsalova, Morondava, Maevatanana. (MADAGASCAR)

Hôte :	C. VERRUCOSUS		Var. SECUNDUM C. OUSTALETI	
Local. géographique	Mandritsara, Antsalova		Andapa	
(en microns)	Moyennes (1)	Mensurations extrêmes	Moyennes (2)	Mensurations extrêmes
Longueur totale	1.654 µ	1.109 - 2.055	1.184	1.035 - 1.305
Largeur	1.263	930 - 1.725	712	600 - 810
Ventouse orale	201 × 225	167-235 × 196-261	135 × 160	120-150 × 140-180
ventrale	173 × 178	156-191 × 156-196	123 × 130	109-130 × 120-146
Pharynx	71 × 93	67- 78 × 83-104	67 × 84	58- 78 × 74- 93
Œsoph. post-pharyngien	56	26 - 104	50 × 10	
Bifurcation œsophagienne	66	52 - 93		26 - 78
Cæcums droit	265 × 76	235-365 × 52-104	227 × 122	180-260 × 100-150
Cæcums gauche	268 × 86		236 × 132	209-240 × 104-177
Testicules droit	334 × 228	260-417 × 219-260	316 × 201	287-297 × 161-261
Testicules gauche	274 × 236		300 × 190	297-365 × 150-240
Ovaire	266 × 145	208-313 × 93-156	191 × 130	172-208 × 114-135
Complexe génital	385 × 296	313-443 × 209-365	280 × 211	219-340 × 160-260
Atrium genital	85 × 58		79 × 58	62-104 × 52-73
Papille atriale	69 × 43	57-88 × 40-57	46 × 39	37-53 × 32-40
Vésicule séminale		510 30-40		
Foll. vitellin	75 × 61		40 ×	
Œufs	31 × 18,8	29-33 × 16-21	28,2 × 17	24-31 × 15-21
Vésicule excrétrice	250	150 - 310	104	78 - 120
Glande de Mehlis			105 × 88	

FIG. 8. *Acanthatrium* (= *Prosthodendrium*) *atriopapillatum* n. sp.

FIG. 10. *A. atriopapillatum*. Atrium genital, vue ventrale. A gauche de l'acétabulum :

GENITAL ATRIUM AND VESICULO-PROSTATIC COMPLEX.

FIG. 9. *A. atriopapillatum*. Épines cuticulaires de la région acétabulaire.

SEE REPRINT FOR FULL DESCRIPTION.

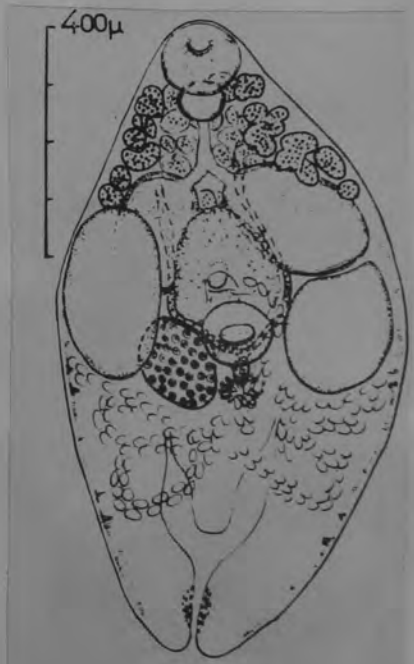


FIG. 12. *A. atriopapillatum* var. *secundum*. Intestin grêle de *C. oustaleti* Andapa. Vue ventrale.

Acanthatrium beuschleini n. sp. Cheng, 1959

Description: Body oval to pear-shaped, 0.18–0.301 (average 0.246) long, 0.16–0.23 (average 0.18) wide; cuticle completely covered with extremely small, closely set spines which are not readily visible in fixed specimens; anterior sucker subterminal, 0.04–0.08 (average 0.06) by 0.05–0.08 (average 0.063); acetabulum in middle of body, 0.05–0.06 (average 0.051) in dameter; prepharynx absent, muscular pharynx 0.014–0.04 (average 0.028) in diameter, esophagus short, 0.01–0.03 in length, intestinal ceca short, reaching anterior margins of testes; testes oval, situated on each side and partially anterior to acetabulum, right testis 0.04–0.07 by 0.04–0.06, left testis 0.032–0.05 by 0.031–0.063; ovary slightly irregular in outline in some specimens, suboval in others, 0.034–0.062 by 0.022–0.044, posterior and mesiad to left or right testis, partially overlapping acetabulum; oötype 0.01–0.012 in diameter; uterus with ascending and descending limbs containing relatively few eggs, ranging from 2 to 31 eggs in specimens studied; both vas deferens and uterus empty into common genital atrium which in turn opens to the exterior through a common genital pore situated in middle of conspicuous, glandular prostate mass; pros-

Received for publication September 30, 1958.

tate mass, 0.02–0.04 by 0.04–0.05 (average 0.032 by 0.044), situated between testes, partially overlapping them along its lateral borders; atrial spines, 11 in number, 0.003–0.005 in length, arranged parallel to each other, pointed posteriad; common genital pore in middle of prostate mass; vitellaria of irregularly shaped follicles, compactly arranged in 2 lateral fields on each side of esophagus and overlapping intestinal ceca dorsally. Eggs operculate, .031–0.05 by 0.01–0.028. Excretory vesicle Y-shaped with terminal excretory pore.

Habitat: Small intestines.

Type locality: Albemarle County, Virginia (five miles west of Charlottesville).

Type host: Eptesicus f. fuscus.

Type specimen: USNM Helminth. Coll. No. 38388.

Paratypes in author's collection.

DISCUSSION

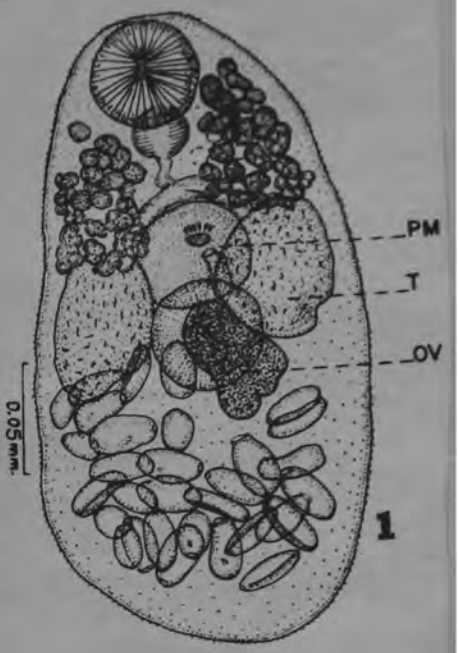
Acanthatrium beuschleini, with its body dimensions averaging 0.246 by 0.18 mm is significantly smaller than the other known species of the genus except for *A. nycterides* Faust, 1919, which measures 0.185–0.2 mm by 0.15–0.16 mm. However, it can be distinguished from *A. nycterides* by the arrangement of its atrial spines which are in a row rather than separated into 3 groups, one associated with each lobe of the 3-chambered atrium as found in the older species.

The genital atrium of *A. beuschleini* is not partitioned and this condition easily separates it from *A. amphidymum* Cheng, 1957, *A. japonicum* (Yamaguti, 1939), *A. nycterides* Faust, 1919 and *A. alicatai* Macy, 1940. The genital atrium of *A. beuschleini* does not possess a conical diverticulum lined with spines and is thus distinguished from *A. ovatum* Yamaguti, 1939. The parallel atrial spines of the new species distinguishes it from *A. pipistrelli* Macy, 1940 in which there is 1 group of spines which is pointed posteriad and 2 lateral groups which are pointed mesiad; from *A. microcanthum* Macy, 1940 in which the spines are circumferentially arranged; from *A. macyi* Sogandares-Bernal, 1956 in which the blunt spines are larger (7–12 microns long) and which are circumferentially arranged at the uterus-atrial junction.

The ovary of *A. beuschleini* is not lobed and is thus distinguished from *A. sphaerula* (Looss, 1896) in which the ovary is multi-lobed. The unlobed acetabulum of the new species separates it from *A. jonesi* Sogandares-Bernal, 1956 in which the acetabulum is distinctly lobed. The presence of a distinct esophagus separates *A. beuschleini* from *A. mollossidis* Martin, 1934 and from *A. oregonense* Macy, 1934 in the latter 2 species the esophagus is definitely absent.

Acanthatrium beuschleini appears to be most closely related to *A. eptesici* Yamaguti, 1932 and *A. oligacanthum* Cheng, 1957, however, it can be distinguished from the former by its smaller body dimensions which are 0.702–1.2 mm by 0.[illegible] 0.764 mm for *A. eptesici*, and also by its smaller atrial spines (for comparative measurements see Cheng, 1957); it differs from *A. oligacanthum* by the number and sizes of its atrial spines, there being consistently 9 in *A. oligacanthum* and 11 in *A. beuschleini*.

In addition to the above listed differences, *A. beuschleini* is the only known species which possesses a completely spinous cuticle. It is generally agreed that morphology, size and arrangement of the atrial spines are the most valid and reliable characters for distinguishing the species of *Acanthatrium* and the atrial spines of *A. beuschleini* (Fig. 3) are strikingly different from those found in the other species.



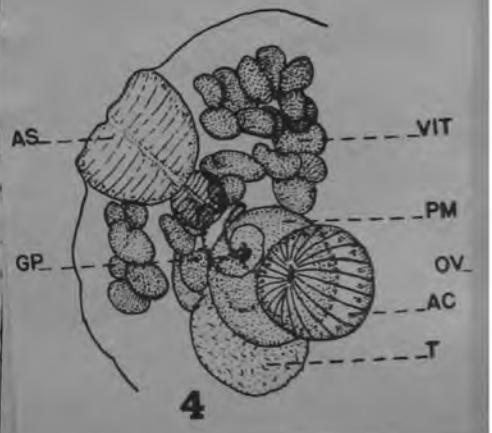


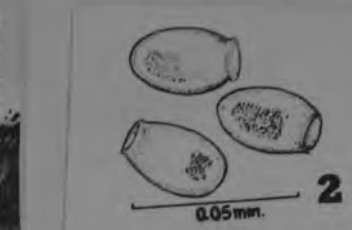
Fig. 4. *A. sogandaresi* holotype

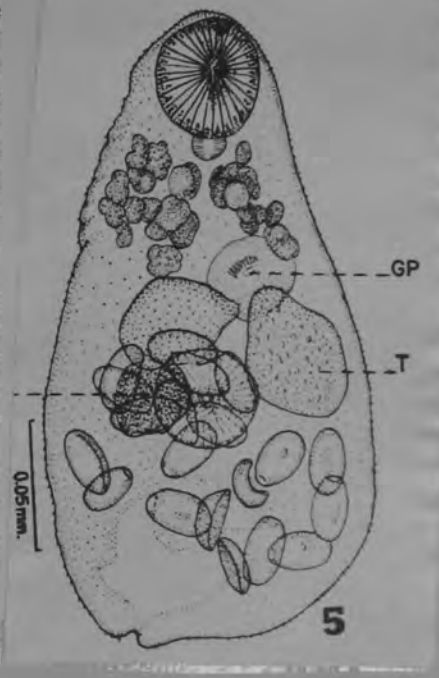
In 1958 Coil and Kuntz described *A. sogandaresi* and in the diagnosis stated: "Terminal male genitalia large spherical mass, dorsal and lateral to acetabulum, containing numerous prostate cells and large seminal vesicle of irregular shape." This condition does not conform to the arrangement as found in *A. pipistrelli* and *A. oligacanthum* (Cheng, In press). In these 2 species the glandular prostate mass is independent of the terminal end of the male ejaculatory duct which structure either empties independently into the genital atrium (as in *A. pipistrelli*) or is fed secretive material from the prostate glands prior to its entrance into the atrium (as in *A. oligacanthum*); in neither case can the prostate mass be termed the "terminal male genitalia". Furthermore, the drawing of Coil and Kuntz (1958:64) shows the spines attached to the distal end of the "genital atrium" which is not closely associated with, nor adjacent to the prostate mass as has been reported for all the other known species. This unusual condition as described in *A. sogandaresi* initiated further investigation on the part of the author. The type marked as USNM Helminth. Coll. No. 38279 was examined.

A critical examination of the type revealed that apparently the specimen had been subjected to considerable pressure and the ejaculatory duct, which is normally dorsal to the genital atrium, had been pushed anteriad and separated from the atrial junction, although not as distant from the junction as Coil and Kuntz had pictured. It is this terminal end of the ejaculatory duct that Coil and Kuntz termed the "genital atrium." The true atrium was seen in its proper place in the center of the prostate mass, opening ventrally through the genital pore. The ascending limb of the uterus was seen to enter the common atrium. These observations strongly suggest that the reproductive structures of *A. sogandaresi* are identically arranged as those of the other species i.e. the male ejaculatory duct and the female metraterm (although not muscular) enter the genital atrium independently and the prostate glands either secrete directly into the male duct or into the atrium proper. The reinterpreted system is in agreement with that found in the other species and conforms to the earlier observations of Macy (personal communication) and the histological studies by the author (in press).

Apparently the drawing of *A. sogandaresi* in the original paper is not of the type specimen since the type revealed large vitelline follicles which intermingle along the medial line of the body (Fig. 5.), each follicle ranging from 0.061 to 0.088 by 0.032 to 0.053 mm. Nevertheless, this species is distinct from the others by the pattern of its vitellaria, being the only species in which the vitelline follicles intermingle along the midline.

It is questionable whether the atrial spines of *A. soganderesi* are actually attached to the distal end of the ejaculatory duct in the normal state; most likely these spines were originally situated in the genital atrium, as in the other species, but were severed from their original location by pressure and became associated with the dislocated ejaculatory duct.





Acanthatrium cahirinus Saoud and Ramadan, 1980

1. ***Acanthatrium (Acanthatrium) cahirinus*** n. sp. Two specimens were discovered in small intestine of ***Taphozous nudiventris nudiventris*** Cretzschmar, 1831 caught from Soltan Hassan Mosque at the Old City in Cairo. Body small, aspinose ; measuring 1.02-1.37 in length and 0.79-1.13 in breadth. Oral sucker, subterminal, round in shape ; its diameter ranges from 0.143-0.157, Pharynx measuring 0.034-0.057 × 0.055-0.057, prepharynx absent. Ventral sucker lies at middle of body 0.55-0.58 from anterior end, measuring 0.117-0.170 × 0.128-0.151. Ratio of oral sucker to ventral sucker 0.9-1.3:1. Pharynx leads to a short oesophagus, measuring 0.019-0.026 in length, two intestinal caeca of lecithodendriid type, ending immediately infront of testes. Two testes of same size, oval in shape and lie at level of acetabulum. Right testis measuring 0.25-0.36 × 0.16-0.26, left one measuring 0.23-0.24 × 0.16-0.20. Cirrus pouch large, lies dorsal to acetabulum extending anteriorly to reach intestinal bifurcation and measuring 0.23-0.44 × 0.25-0.30. Genital atrium lies between ventral sucker and intestinal bifurcation ; measuring about 55 u in diameter, armed with 8-9 distinct atrial spines measuring 4-5 u in length. Ovary not lobed ; elongated oval in shape measuring 0.32-0.38 × 0.12-0.19. Vitellaria in form of two groups of vitelline follicles (17-23 in each side), extending above intestinal caeca to reach pharyngeal level anteriorly. Uterus not voluminous ; full of yellow or dark brown eggs measuring 23 u × 13-17 u each.

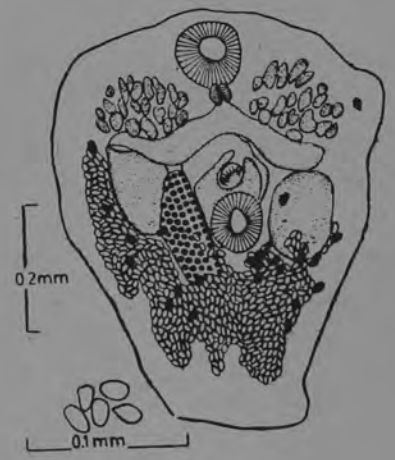


FIG.1

Fig. 1 : **Acanthatrium (Acanthatrium) cahirinus** n. sp. Ventral View of Mature Worm and Eggs.

The shape of the ovary, being unlobed, distinguishes *Acanthatrium (A.) cahirinus* n. sp. as a member of the subgenus *Acanthatrium* Faust, 1919, while the lobed ovary clearly puts the other species, *Acanthatrium (P.) aegyptiacus,* in the subgenus *Paracanthatrium* Dubois, 1961.

A. (A.) cahirinus n. sp. may be related to two species of the subgenus *Acanthatrium viz. A. (A.) amphidymum* Cheng, 1957 and *A. (A.) nycteridis* Faust, 1919. The new species differs from *A. (A.) amphidymum* in the absence of a partitioned genital atrium as well as the body shape. Also, it can be easily differentiated from *A. (A.) nyoteridis* by the size of the eggs which is much larger in the latter species, measuring 44 u × 33 u in comparison with 23 u × 13-17 u in the new species. It is worth mentioning that *A. (A.) cahirinus* is the first member of the subgenus *Acanthatrium* to be described from Egypt.

ZOOLOGY.—*A new trematode*, Acanthatrium eptesici, *from the brown bat.*[1] JOSEPH E. ALICATA, Bureau of Animal Industry. (Communicated by BENJAMIN SCHWARTZ.)

Three flukes representing a new species of trematode belonging to the family Lecithodendridae Odhner, 1910, and to the genus *Acanthatrium* Faust, 1919, were collected by the writer in November, 1931, from the intestine of the brown bat, *Eptesicus fuscus*, captured in Washington, D. C. The new species is described in this paper.

Acanthatrium eptesici, new species ALICATA, 1932 PROC. WASH. ACAD. SCI.

Figs. 1 and 2.

Specific diagnosis.—Acanthatrium: Body rounded, flattened dorsoventrally, from 702μ to 1.2 mm. long by 468 to 764μ wide in middle of body. Cuticular spines absent. Oral sucker subterminal, 98 to 114μ long by 98 to 114μ wide; acetabulum 72 to 98μ long by 80 to 98μ wide. Prepharynx absent; pharynx 38 to 45μ long by 49 to 53μ wide; esophagus 34 to 76μ long. Intestinal ceca short, simple, extending to anterior margins of testes. Excretory bladder V-shaped. Testes ovoid to pyriform, located on same zone as acetabulum, and transverse in position; right testis 121 to 281μ long by 129 to 205μ wide; left testis 121 to 258μ long by 91 to 197μ wide. Seminal vesicle long and coiled; prostate cells numerous, forming a mass 121 to 327μ long by 186 to 358μ wide. The entire mass is enclosed in a delicate sac-like membrane. Genital pore somewhat anterior to acetabulum and anterior to zone of testes. Genital atrium slightly anterior to genital pore, and lined with one group of long, narrow spines. Ovary ovoid, regular or lobed, the largest axis transverse, oblique or longitudinal in position. Vitellaria composed of large follicles which may extend from about level of pharynx to anterior margins of testes. Uterus long and arranged for the most part transversely, occupying posterior half of body length and terminating in a moderately developed metraterm. Eggs oval, 20 to 30μ long by 15μ wide, with yellowish brown, thin shell.

Host.—Eptesicus fuscus.

Location.—Small intestine.

Distribution.—United States (Washington, D. C.).

Type specimen.—U. S. N. M. Helm. Coll. No. 30135; paratypes No. 30136.

Acanthatrium eptesici differs from the other two species of the genus, namely *A. sphaerula* (Looss, 1896) Faust, 1919, and *A. nycteridis* Faust, 1919,

Received March 16, 1932.

Fig 3
FROM MACY, 1940
ATRIAL SPINES

H001

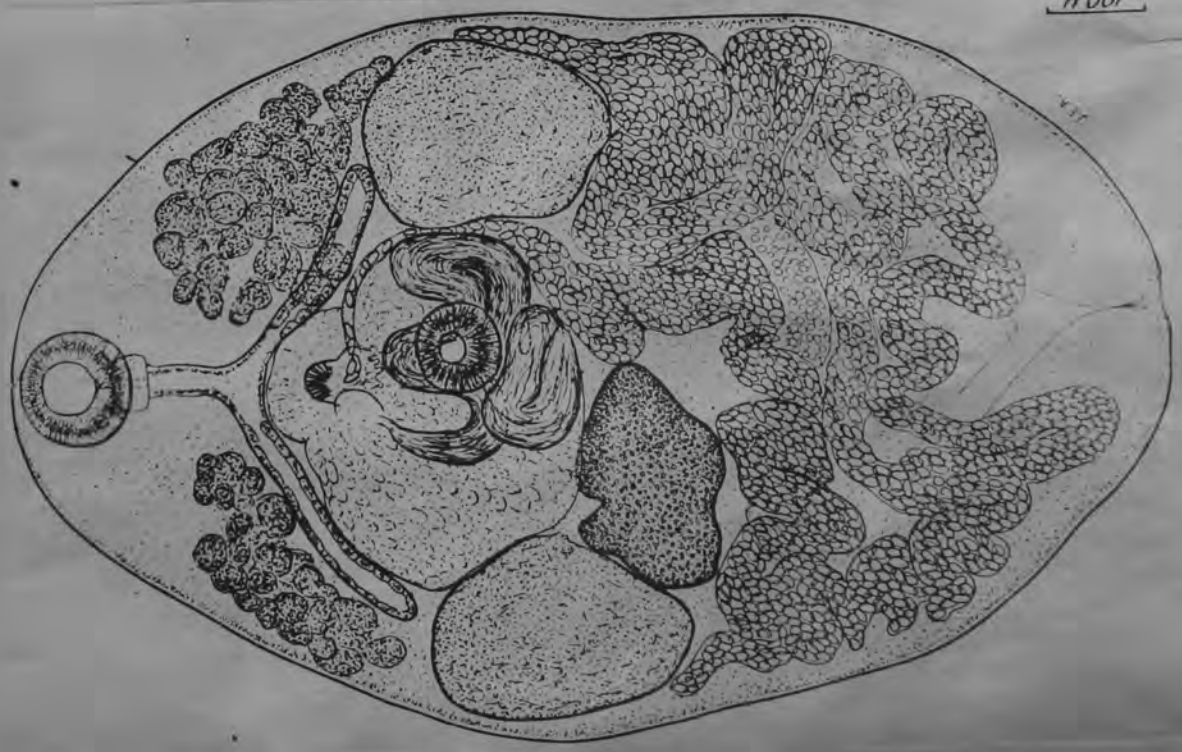


FIG. 1.—*Acanthatrium eptesici*. ×125. Ventral view.

4. *Acanthatrium jonesi* n. sp. Sogandares, 1956
(Figs. 8, 9)

Diagnosis (based on six specimens): *Acanthatrium;* body pear-shaped, cuticula aspinose; body length 0.46 to 0.65; maximum width 0.28 to 0.32 mm. Mid-acetabulum 0.21 to 0.28 mm from anterior end of body. Acetabulum 0.056 to 0.067 mm long by 0.056 to 0.066 mm wide; with two broad lobes on posterior lip. Oral sucker terminal, 0.070 to 0.077 wide Sucker ratio 1:0.8 to 0.9. Prepharynx absent. Pharynx 0.028 to 0.042 mm long by 0.028 to 0.042 mm wide. Esophagus approximately three-fourths length of pharynx. Ceca extending almost laterally and terminating slightly in front of testes near level of anterior edge of acetabulum. Genital atrium with numerous minute spines at its anteriormost end; spines 7 to 12 microns long. Prostatic mass mainly to right of mid-line, between testes, extending to posterior border of acetabulum. 0.049 to 0.105 mm long by 0.049 to 0.091 mm wide; seminal vesicle coiled. Testes lateral, on either side of acetabulum; 0.056 to 0.106 mm long by 0.56 to 0.112 mm wide. Vitellaria large, irregular in shape, lateral and anterior to ceca, not confluent anteriorly, extending from level of esophagus to ends of ceca. Vitelline ducts extending posteriorly, mesially, and ventral to prostatic mass, joining near equator. Ovary overlapping prostatic mass slightly, dextral, immediately posterior to acetabulum; 0.049 to 0.084 mm long by 0.035 to 0.077 mm wide. Uterus mainly posttesticular descending on right side and ascending on left side of body and entering genital atrium on left side. Eggs (Fig. 9) thick-shelled, with operculum; 21 to 31 to 14 by 20 microns.

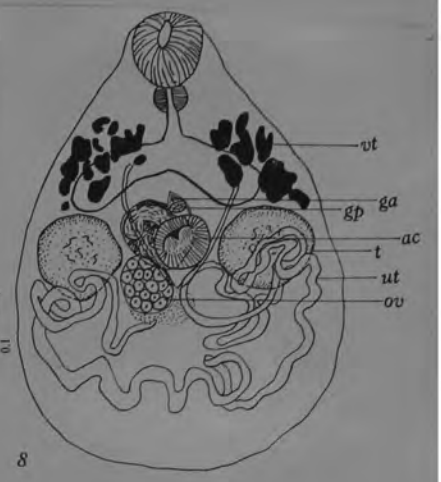
Host: Vespertilio superans.

Location: Intestine.

Locality: 7 miles east of Seoul, near the Han River, Korea.

Holotype: U. S. National Museum Helminthological Collection No. 37255.

A. jonesi is named after its collector, J. Knox Jones.



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Discussion: A. jonesi differs from all other species in the genus *Acanthatrium* Faust, 1919 in possessing acetabuluar lobes. It closely resembles *A. ovatum* Yamaguti, 1939 from a different host, *Rhinolophus ferrum-equinum nippon* Temm., in Kyoto, Japan, but differs from that species in having an equatorial acetabulum (as compared with postequatorial) and possessing lobes.

A. jonesi is also closely related to *A. chosenicum* (Ogata, 1940) differing from it as follows: The testes are more posteriorly located (testes lateral to acetabulum as compared with the posterior end of testes approaching the anterior end of acetabulum), the ceca are more voluminous and do not overlap the genital atrium; the spines of the genital atrium are arranged differently (at anterior end of atrium as compared to covering most of the atrial wall); the acetabulum has lobes; and finally the body is smaller (0.46 to 0.65 mm as compared with 1.25 mm.)

9

ACANTHATRIUM LUNATUM N. SP., A PARASITE OF THE BIG BROWN BAT AND A KEY TO THE DESCRIBED SPECIES OF *ACANTHATRIUM*

(TREMATODA: LECITHODENDRIIDAE)

RUSSELL R. WILLIAMS

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Trematodes of the genus *Acanthatrium* Faust, 1919 have frequently been found in bats I have examined but not in so great a number as other lecithodendriid flukes. Species of *Acanthatrium* differ from other Lecithodendriinae in that each possesses pretesticular vitellaria and a genital atrium lined with spines. The species are separated within the genus mainly on the presence or absence of an esophagus, the character of the atrial spines, and the presence or absence of cuticular spines. The known species[1] include *A. sphaerula* (Looss, 1896) Faust, 1919; *A. nycteridis* Faust, 1919; *A. eptesici* Alicata, 1932; *A. molossidis* Martin, 1934; *A. oregonense* Macy, 1939; *A. ovatum* Yamaguti, 1939; *A. alicatai* Macy, 1940; *A. microcanthum* Macy, 1940; *A. pipistrelli* Macy, 1940; *A. jonesi* Sogandares-Bernal, 1956; *A. macyi* Sogandares-Bernal, 1956; *A. amphidymum* Cheng, 1957; *A. oligacanthum* Cheng, 1957; *A. sogandaresi* Coil and Kuntz, 1958; and *A. beuschleini* Cheng, 1959. *Mesothatrium japonicum* (Yamaguti, 1939) Sogandares-Bernal, 1956, a bat trematode of this subfamily known to possess posttesticular vitellaria and spines in the genital atrium, was considered a species of *Acanthatrium* by Cheng in 1957. Cheng revised the description of the genus *Acanthatrium* to definitely include forms having pre- or posttesticular vitellaria or both. In view of a parallel situation occurring in this subfamily between the genera, *Lecithodendrium* and *Prosthodendrium*, I agree with Sogandares-Bernal (1956) that the position of the vitellaria is of generic value and therefore *M. japonicum* should not be in the genus *Acanthatrium*. I propose that the genus *Mesothatrium* is valid and that the genus *Acanthatrium* be restricted to lecithodendriid trematodes having spined genital atria and pretesticular vitellaria.

In a recent parasite survey of bats from localities in Ohio and Kentucky, a new species of *Acanthatrium* was encountered. Fourteen specimens were found in seven of 51 big brown bats. The worms were first examined alive and then fixed in either 10 percent formalin or Lavdowsky's formula of AFA fixing reagent. Certain structures, such as cuticular spines and genitalia, could best be seen in living specimens. Final measurements were made from preserved and stained material mounted permanently in piccolyte or temporarily in glycerin.

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Acanthatrium lunatum n. sp.

(Figures 1–4)

The name *lunatum*, from the Latin word "lunatus," refers to the crescent-shaped group of spines in the genital atrium, which character is distinctive for this species. The measurements appearing in parentheses in the following diagnosis are of the type specimen.

Diagnosis (based on 10 specimens).—Body pyriform to oval, 0.94–1.13 mm (0.96 mm) long by 0.36–0.55 mm (0.50 mm) wide. Minute cuticular spines covering either entire or anterior ¾ of body. Subterminal oral sucker comparatively large, 111–152 μ (152 μ) long by 118–146 μ (128 μ) wide. Pharynx muscular, 37–57 μ (47 μ) long by 39–64 μ (42 μ) wide. Esophagus in relaxed specimens attains length of 150 μ. Intestinal ceca of lecithodendriid type, 174–202 μ (187 μ) long by 37–59 μ (44 μ) wide. Acetabulum about same size as oral sucker, 112–151 μ (114 μ) long by 125–154 μ (154 μ) wide, located approximately midway in body. Testes lateral, in same general transverse plane as acetabulum, slightly preacetabular or postacetabular depending on amount of body contraction. Right testis 99–171 μ (168 μ) long by 79–148 μ (148 μ) wide; left testis 111–172 μ (148 μ) long by 86–138 μ (112 μ) wide. Ovary oval, 91–142 μ (127 μ) long by 79–100 μ (90 μ) wide, on right side, dorsal, posterolateral to acetabulum, at an angle between right testis and acetabulum. Prostate mass large, 143–254 μ (149 μ) long by 143–222 μ (143 μ) wide, containing coiled seminal vesicle, numerous prostate cells, and anterior genital atrium lined with numerous long spines. Spines of genital atrium 15–28 μ (26 μ) long, 100 or more in number, arranged in a crescentic group in a brush-like fashion. Genital pore slightly posterior to atrial spines. Seminal receptacle and Laurer's canal present. Vitellaria pretesticular, bilateral, consisting of medium to large follicles, 10 to 15 per lateral group, anterior to testes but not extending mesad to esophagus. Uterus bulging with light brown eggs near metraterm. Eggs numerous, 25–30 μ (25–26 μ) long by 13–17 μ (14–17 μ) wide.

Host.—*Eptesicus fuscus fuscus* (Beauvois).

Site of infection.—Small intestine.

Locality.—Eleven specimens, including the type, from four bats taken in Columbus (Franklin County), Ohio. Three specimens from three hibernating bats taken in a cave at Carter Caves State Park (Carter County), Kentucky.

Type specimen.—Holotype and one paratype in U. S. National Museum Helminthological Collection, No. 38890. Other paratypes in The Ohio State University Helminthological Collection and in my collection.

[1]Etges (1960, J. Parasitol. 46:235-240) describes a new species, *Acanthatrium anaplocami*, which is not included in this paper.

This trematode has the arrangement of organs similar to *Acanthatrium pipistrelli* but differs from it primarily in the character of the atrial spines, the length of the esophagus, and the possession of cuticular spines. As indicated by Macy (1940), the slender atrial spines of *A. pipistrelli* are 25 μ long and number about 35; they are arranged in a compact slightly curved group. The atrial spines of *A. lunatum* are about three times as numerous and arranged in a broad crescentic group. The esophagus of *A. pipistrelli* is extremely short and there are no spines on the body surface; *A. lunatum* possesses a long esophagus and cuticular spines. The atrial spines of *A. eptesici*, another species closely resembling *A. lunatum*, are 25 μ long but arranged in a narrow compact group in the anterior part of the prostate mass rather than in a broad crescentic group as in *A. lunatum*. *A. eptesici* does not possess cuticular spines. *A. lunatum* differs from all other members of this genus mainly in the arrangement, size, and number of atrial spines.

Key to the Species of the Genus Acanthatrium

1.	Esophagus present	2
1'.	Esophagus absent	13
2(1).	Cuticula spinose	3
2'.	Cuticula not spinose	6
3(2).	Atrial spines 15–28 μ long, 100 or more in number	*lunatum*
3'.	Atrial spines less than 15 μ long, less than 12 in number	4
4(3').	Atrial spines 7 in number, 7–8 μ long; eggs 28 μ x 14 μ	*macy*
4'.	Atrial spines less than 7 μ long	5
5(4').	Atrial spines 11 in number, 3–5 μ long; eggs few, 31–50 μ x 10–28 μ	*beuschlein*
5'.	Atrial spines 9 in number, 2 μ long; eggs numerous, 27 μ x 19 μ	*oligacanthus*
6(2').	Ovary multi-lobed, in same transverse field as prostate mass	*sphaerul*
6'.	Ovary generally spherical or oval, not multi-lobed, posterolateral to prostate mass	7

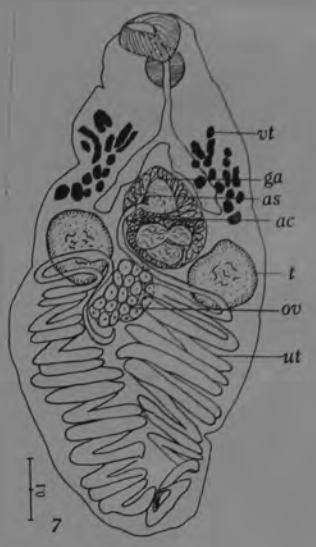
7(6').	Genital atrium divided into two or more chambers	8
7'.	Genital atrium consisting of only a single chamber	10
8(7).	Atrium divided into two chambers, atrial spines 14 μ long	*amphidymum*
8'.	Atrium divided into three chambers, atrial spines 10–26 μ long	9
9(8').	Atrial spines 10–15 μ long	*nycteridis*
9'.	Atrial spines 22–26 μ long	*alicatai*
10(7').	Atrial spines 25 μ long	11
10'.	Atrial spines less than 20 μ long	12
11(10).	Atrial spines in single compact parallel group directed caudad; oral sucker larger than acetabulum	*eptesici*
12(10').	Atrial spines circumferentially arranged; esophagus three or more times as long as pharynx	*microcanthum*
12'.	Atrial spines not circumferentially arranged; esophagus less than three times as long as pharynx	13
13(12').	Esophagus at least twice as long as pharynx; atrium with a conical diverticulum lined with spines 18 μ long	*ovatum*
13'.	Esophagus shorter than pharynx; atrium free of a diverticulum	14
14(13').	Oral sucker spherical or ellipsoidal, 0.070–0.077 mm wide; body length 0.46–0.65 mm	*jonesi*
14'.	Oral sucker not spherical or ellipsoidal, 0.11–0.16 mm wide; body length 0.70–0.81 mm	*sogandaresi*
15(1').	Cuticula spinose, spines on anterior ⅓ of body; atrial spines 5 μ long, directed cephalad	*molossidis*
15'.	Cuticula aspinose; atrial spines 10–15 μ long, directed caudad	*oregonense*

Acanthatrium nycteridis plicati Bhalerao, 1926, a subspecies, differs from *A. nycteridis nycteridis* mainly in the arrangement of the uterine coils, and the body, oral sucker, and acetabulum measurements being greater.

3. *Acanthatrium macyi* n. sp. Sogandares, 1956
(Fig. 7)

Diagnosis (based on three specimens): *Acanthatrium;* cuticula spined; body length 0.81 to 0.96 mm; maximum width 0.42 to 0.48 mm. Oral sucker terminal, 0.072 to 0.098 mm in diameter. Pharynx 0.042 to 0.049 mm long by 0.035 to 0.049 mm wide. Esophagus 0.120 mm long when extended; ceca extending to anterior border of testes, ending about one-third body length. Acetabulum 0.043 to 0.056 mm wide; mid-acetabulum 0.309 to 0.343 mm from anterior end of body. Sucker ratio 1:0.47 to 0.78. Genital pore median, immediately anterior to acetabulum. Testes rounded, lateral, slightly preequatorial; 0.08 to 0.14 mm long by 0.08 to 0.13 mm wide. Prostatic mass intercecal, median, beween posterior edge of cecal junction and mid-testicular level; 0.168 to 0.189 mm long by 0.175 to 0.203 mm wide; membrane surrounding prostatic mass and also vesicula seminalis and genital atrium. Atrium armed with seven bluntly tipped spines, 0.007 to 0.008 mm long; located anteriad of utero-atrial junction. Ovary 0.126 mm long by 0.098 mm wide, equatorial, slightly sinistral, almost touching left testis. Vitellaria pretesticular, mainly lateral to ceca, composed of small irregular follicles. Uterus filling most of hindbody posterior to testes. Receptaculum seminis uterinum noticeable only in sections. Eggs 28 by 14 microns.

Host: Pipistrellus sp.
Location: Small intestine.
Locality: Korea (No other data on collection label.)
Holotype: U. S. National Museum Helminthological Collection No. 37254.
A. macyi is named after Dr. R. W. Macy of Reed College, Portland, Oregon.



Discussion: Ten species and 1 sub-species have been named in the genus *Acanthatrium* Faust, 1919. *A. alicatai* Macy, 1940; *A. chosenicum* (Ogata, 1940) n. comb. (synonym *Lecithodendrium chosenicum* Ogata, 1940); *A. eptesici* Alicata, 1932; *A. microcanthium* Macy, 1940; *A. mollosidis* Martin, 1934; *A. nycteridis* Faust, 1919; *A. nycteridis plicati* Bhalerao, 1926; *A. pipistrelli* Macy, 1940; *A. oregonense* Macy, 1939; *A. ovale* Yamaguti, 1939; *A. sphaerula* (Looss, 1896) Faust, 1919. *Acanthatrium macyi* differs from *A. alicatai* in the following characters: The body is longer in proportion to width (approximately 1: 0.5 as compared with 1:0.84 to 0.95); the eggs differ in size and shape (28 by 14 microns as compared with 29 to 32 by 17 to 18 microns). *A. macyi* differs from *A. pipistrelli* as follows: In having much shorter atrial spines (7 to 8 microns as compared with 25 microns); a longer esophagus; and different sucker ratio (1:0.47 to 0.78 as compared to 1:0.93 to 1.12).

Lecithodendriidae

Acanthatrium micracanthum Macy, 1940

originally microacanthum

The second species has been found on two occasions in hibernating bats; three specimens were taken from a big brown bat, March 5, 1936, and three others were collected previously from the same kind of bat. The description follows:

Acanthatrium microcanthum ~~n. sp.~~ Macy, 1940

(Figs. 7, 8, 10, 11)

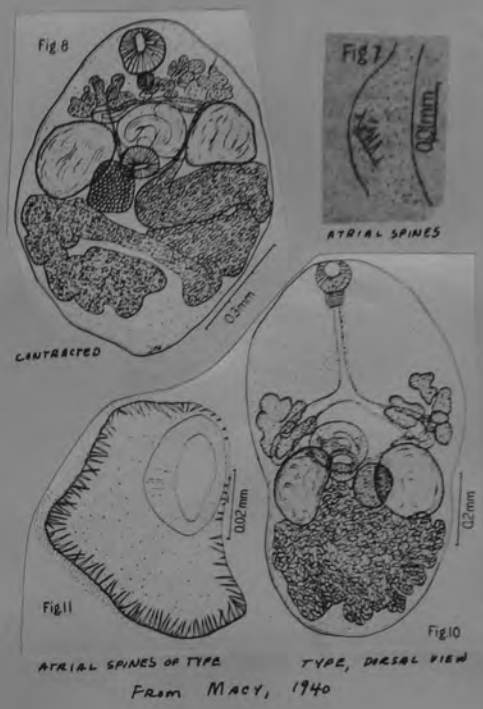
Specific diagnosis: Acanthatrium: Body 0.9 to 1.1 mm long by 0.65 to 0.70 mm wide. Cuticula aspinose. Oral sucker 0.12 to 0.16 mm wide by 0.07 to 0.15 mm long, subterminal. Ventral sucker 0.12 to 0.15 mm wide by 0.08 to 0.14 mm long, located between the testes and overlapping the prostate mass. Pharynx nearly spherical, from 0.04 to 0.06 mm in diameter. Esophagus in relaxed specimens very long. Intestinal ceca of the short lecithodendriid type. Testes rounded, 0.19 mm in diameter, postequatorial in relaxed specimens and equatorial to pre-equatorial in contracted examples. Prostate mass averages about 0.17 mm in diameter and is situated between the testes and the intestinal fork. The genital atrium is near the middle or in the anterior part of the prostate mass. Spines which line the atrium in a single row, measure 3 μ to 7 μ in length. A coiled seminal vesicle is present. Ovary about 0.15 mm in diameter; between the testes. In contracted specimens it is shifted slightly caudad. Vitellaria reduced, located around the intestinal ceca, just anterior to the testes. Follicles of the vitellaria rather distinct; from 5 to 8 on each side. Uterus with heavy slings nearly filling the posterior part of the body. In living specimens, the portion of the uterus leading into the metraterm is greatly swollen and much darker than the rest of the uterus due to the change in egg color. Slings of uterus tend to be transverse. Eggs measure 14 μ to 16 μ by 23 μ to 27 μ.

Host: Eptesicus fuscus (Beauvois).

Location: Small intestine.

Locality: St. Paul, Minnesota.

Type specimens: U. S. Nat. Mus. Helm. Coll. No. 36669; paratypes in author's collection.



From MACY, 1940

Acanthatrium molossidis Martin, 1934

Fig.5

From Macy, 1940

Paratype

Fig.4

Fig.6

Atrial spines

Acanthatrium oligacanthum Cheng, 1957

Acanthatrium oligacanthum n. sp.

Five specimens of this species were recovered from the small intestine of 2 bats, *Eptesicus f. fuscus* from Russell County, Va. The specific name *oligacanthum* is from the Greek words "oligos" meaning "few" and "acanthum" meaning "spine." In this case reference is made to the few small atrial spines which are characteristic of this new species. All measurements, except where indicated, represent the average, in millimeters.

Specific diagnosis: Spinous body pyriform to oval, 0.49 to 0.38 long, 0.322 to 0.238 wide. Subterminal oral sucker 0.081 in diameter. Prepharynx absent. Muscular pharynx 0.037 in diameter. Short esophagus, 0.018 in length, bifurcates into intestinal ceca in region just anterior to prostate mass. Ceca of typical lecithodendriid type. Acetabulum 0.055 in diameter, situated between testes. Testes subspherical, in mid-region of body; right testis 0.107 by 0.098, left testis 0.108 by 0.09. Two vasa efferentia rise from respective anterio-lateral margins of testes and unite anterio-medially, just below the prostate mass, as common vas deferens. Anteriorly vas deferens enters indistinct seminal vesicle which leads into thicker ejaculatory duct. Ovary pyriform, 0.088 by 0.065, situated posterior to right testis and partially covered by it. Ovary gives rise posteriorly to short oviduct which proceeds to area just below acetabulum where it enters oötype. Uterus, filled with yellowish-brown eggs, 0.027 by 0.019, occupies most of area posterior to lower margins of testes and acetabulum. Medium-sized vitelline follicles confined to each side of esophagus and in front of testes; from posterio-medial margins of 2 vitelline masses, arise respective vitelline ducts which unite posteriorly just anterior to oötype and enter as a common duct. Prostate mass, 0.071 by 0.075, occupies region bordered by angle of intestinal ceca. Genital atrium in right upper quadrant of prostate mass, lined along 1 wall with 9 minute spines, 0.002 long, pointed dorso-medially. Genital pore in middle of prostate mass.

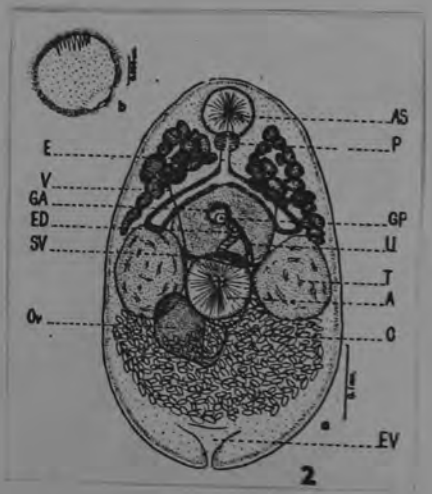
Host: Eptesicus f. fuscus (Beauvois)
Habitat: Small intestine.
Locality: Russell County, Va.
Type specimen: U. S. Nat. Mus. Helminth. Coll. No. 38174.
Paratypes in author's collection.

A. oligacanthum n. sp. bears the closest resemblance to *A. microcanthum* and *A. molossidis;* however, the many atrial spines of *A. microcanthum* (0.003–0.007) are distinctly arranged in a circumferential pattern, while those of *A. molossidis* (0.005) are arranged in no definite pattern but are more in number and larger in size than those of *A. oligacanthum.* Furthermore, the absence of cuticular spines again separates *A. oligacanthum* from *A. molossidis.*

FIGURE 2. a. *Acanthatrium oligacanthum* n. sp. Ventral view. Camera lucida drawing.

A. Acetabulum.
AS. Anterior sucker.
E. Esophagus.
ED. Ejaculatory duct.
EV. Excretory vesicle.
GA. Genital atrium.
GP. Genital pore.
O. Oötype.
Ov. Ovary
P. Pharynx.
SV. Seminal vesicle.
T. Testis.
V. Vitellaria.
U. Uterus.

b. Enlarged drawing of the genital atrium showing the arrangement of the atrial spines.



Lecithodendriidae

An examination of the intestinal contents of the Northwest Coast bat, *Myotis californicus caurinus* and of the little big-eared bat, *Myotis evotis evotis*, at Nelscott, Oregon, August 13, 1938, yielded 347 specimens of a new species of trematode belonging to the genus *Acanthatrium* Faust, 1919. It is herein described.

Acanthatrium oregonense, ~~sp. nov.~~ Macy, 1939

Specific diagnosis.—Acanthatrium: Body pyriform, much flattened dorsoventrally, 0.65 to 0.82 mm. long by 0.65 to 0.83 mm. wide. Cuticula without spines. Oral sucker terminal or nearly so, from 0.078 to 0.087 mm. in diameter. Ventral sucker just anterior to body middle, approximately equal in size to the oral sucker, measuring from 0.085 to 0.09 mm. in diameter. Anterior margin of ventral sucker 0.27 to 0.3 mm. from the anterior end of the body. Pharynx 0.031 to 0.038 mm. long by 0.042 to 0.045 mm. wide. Prepharynx absent. Oesophagus apparently absent. Testes ovate, 0.14 to 0.18 mm. in diameter, located at the terminations of the intestinal cecae. Prostate mass large, average diameter 0.16 to 0.22 mm., bordered anteriorly by cecae, posterior part overlapped by acetabulum. Coiled seminal vesicle opening into genital pore, the latter surrounded by a sphincter muscle and located near the center of the prostate mass. Atrial spines from 0.01 to 0.015 mm. long, directed caudad, arranged in a long crescent between the genital pore and the anterior margin of the prostate mass. Ovary overlapping posterior part of testicular zone, on right side of body axis, 0.07 to 0.11 mm. long by 0.12 to 0.185 mm. wide. Vitellaria in compact masses, reaching from level of pharynx to testes. Eggs average 0.030 mm. long by 0.016 mm. wide. Slings of uterus mainly transverse, largely filling posterior part of body.

Host. *Myotis californicus caurinus* Miller; also *Myotis evotis evotis* (A. Allen).

Location.—Intestine.

Distribution.—Nelscott, Oregon.

Type specimen.—U. S. N. M. Helm. Coll., paratypes in same and in author's collection.

Fig. 1


Fig. 2.

Discussion

This species differs from *A. sphaerula* (Looss, 1896) by the single row of longer spines, those of the latter being short and scattered. *A. sphaerula* has the ovary in the anterior zone of the testes and the acetabulum is posterior to the zone of the prostate mass and testes, whereas the ovary of *A. oregonense* is at the posterior level of the testes and the acetabulum overlaps the prostate mass and testicular zone. *A. eptesici*, Alicata, 1932, has atrial spines up to 0.023 mm. long and arranged in a compact mass in contrast to those of *A. oregonense* in which the spines are little more than one-half as long. The sucker ratio of the two species is quite different, the acetabulum of *A. eptesici* being much smaller than the oral sucker, as is also true of *A. nyctenidis* Faust, 1919. Also the latter has scattered spines rather than the single row found in *A. oregonense*. The very small spines of *A. molossidis* Martin, 1934, are less than half the length of those of *A. oregonense*.

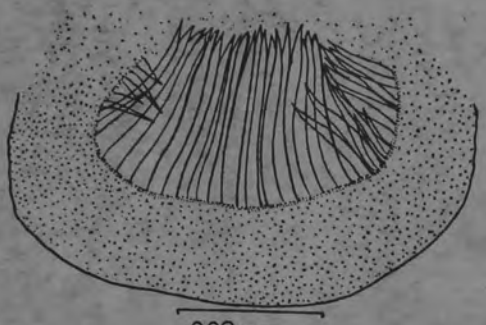
As to the distribution of the new species in the hosts, 169 were found in 14 individuals of *Myotis evotis evotis*. From one *Myotis evotis* 92 of the flukes were recovered; on the other hand none was found in three *M. californicus*. The average number of *A. oregonense* in *M. californicus* was 12 and the average in *M. evotis* was 44.5. Most of the flukes were mature.

Lecithodendriidae

Acanthatrium pipistrelli Macy, 1940

FROM MACY, 1940
DORSAL VIEW, TYPE.

Three specimens of the first species were obtained for study from a pipistrelle bat taken in hibernation at St. Peter, Minn., February 12, 1934. The species is characterized by the single group of long, slender spines of the genital atrium, each spine measuring about 25 μ long; by the subequal suckers which are large in proportion to the size of the body, and by the short space between them.



TEXT-FIG. 1. *Acanthatrium pipistrelli*, atrial spines of type, enlarged.

Acanthatrium pipistrelli ~~n. sp.~~ Macy, 1940

(Fig. 1, Text-Fig. 1)

Specific diagnosis: Acanthatrium: Body oval to elliptical, 0.60 mm long by 0.48 mm wide. Cuticula without spines. Oral sucker 0.10 to 0.12 mm in diameter, subterminal. Acetabulum 0.12 to 0.13 mm wide by 0.09 to 0.10 mm long, located about midway between the testes and only a short distance from the oral sucker. Pharynx 0.040 mm wide by 0.026 mm long. Esophagus extremely short. Intestinal ceca very short but reaching testes. Testes 0.10 to 0.12 mm in diameter, lateral to acetabulum and prostate mass. Prostate mass 0.13 to 0.16 mm in diameter; anterior margin touching or close to ceca overlapped by acetabulum. Spines of the genital atrium in a single compact group in the anterior part of the prostate mass, directed posteriad; about 35 in number. The spines measure about 25 μ long. Ovary small, ovoid, entire; 0.07 mm wide by 0.05 mm long. Vitellaria in compact lateral masses, reaching from the level of the pharynx to the testes. Uterus filling the body posterior to the testes and acetabulum. Egg 13 μ by 24 μ in size.

Host: Pipistrellus subflavus (F. Cuvier).

Location: Small intestine.

Locality: St. Peter, Minnesota.

Type specimen: U. S. Nat. Mus. Helm. Coll. No. 36670; paratypes in author's collection.

GENUS *Acanthatrium* Faust, 1919

A. sogandaresi, n. sp. (Fig. 2.) Coil & Kuntz, 1958

DIAGNOSIS: Small distomes, almost circular shape in poorly relaxed specimens. Cuticular spines not apparent. Length 0.70-0.81, width 0.69-0.88. Oral sucker terminal, not spherical or ellipsoidal in shape, 0.11-0.16 wide. Prepharynx lacking or extremely short. Pharynx 0.46-0.61 wide. Esophagus very short, 0.030, apparent in sections or lacking. Ceca short, inflated, extending laterad through posterior part of vitelline follicles. Acetabulum 0.12-0.13 wide, located in shallow depression, directed toward anterior. Testes lateral, symmetrical, located just posterior to vitelline follicles. Terminal male genitalia large spherical mass, dorsal and lateral to acetabulum, containing numerous prostate cells and large seminal vesicle of irregular shape. Slightly muscular genital pore opens, opposite to acetabulum, into same shallow depression. Genital atrium slightly muscular with small spines, apparently with irregular disposition. Ovary slightly lateral to acetabulum and overlapping testes. Vitelline follicles clumped in anterior region lateral to oral sucker and pharynx. *Receptaculum seminalis uterinum* voluminous, occupying a position corresponding to that of ovary, but on other side. Uterus filled with numerous eggs; it occupies the posterior half of body. Eggs 0.025-0.27 by 0.013-0.015.

HOST: Bat, *Plecotus auritus*.

SITE OF INFECTION: Small intestine.

LOCALITY: Instanbul, Turkey.

TYPE SPECIMEN: Holotype in Helminthological Collection of U. S. N. M., No. 38279.

A. sogandaresi is similar to three other species which either lack an esophagus or possess a short one (*A. molossidis* Martin, 1934, *A. oregonese* Macy, 1939, and *A. pipistrelli* Macy, 1940). The species described here can be differentiated from these species by the peculiar shape of the oral sucker and by the short length of the atrial spines. Cheng (1957) and Sogandares (1956) have published noteworthy discussions of this genus.

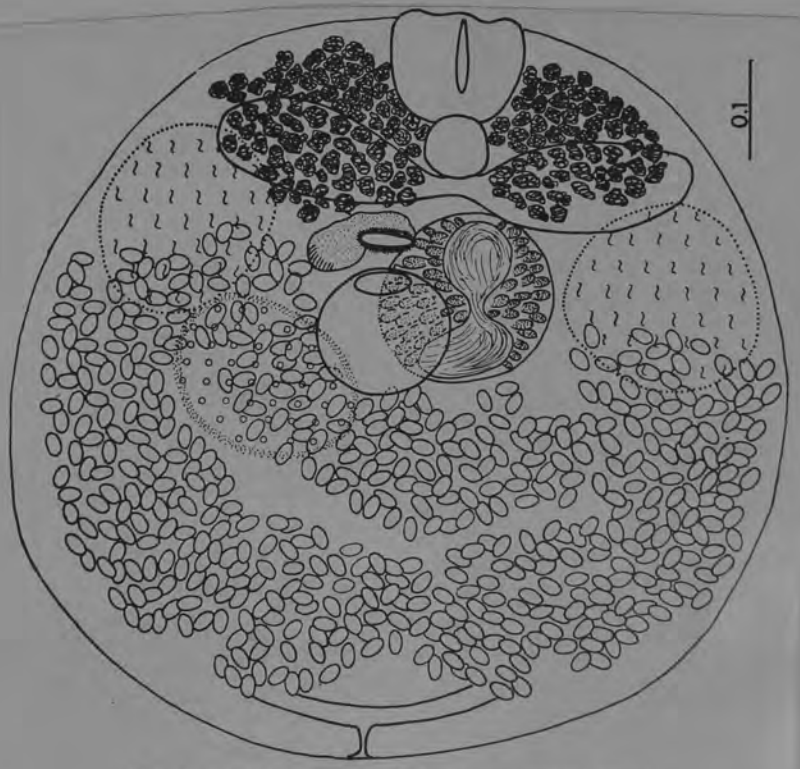


Fig. 2. *Acanthatrium sogandaresi*, n. sp., ventral aspect.

GENUS *Acanthatrium* FAUST, 1919

1. *sphaerula* (Looss, 1896)

Looss discovered this species in the intestine of *Rhinolophus hippocrepis* from the Pyramid of Giza. In the present study specimens were collected from *Taphozous perforatus*, March 12, 1952, January 31, 1953, Giza Pyramid; and same host, January 21, 1952, caves at Abu Rauwash.

Lecithodendriidae

Acanthatrium (Acanthatrium) tatrense, Zdzitowiecki 1967

In the course of studies on the helminthofauna of bats in Poland the author sectioned 22 bats of the species *Myotis mystacinus* (Leisler in Kühl, 1819) caught in caves of the Polish Tatra Mts. The trematodes found were killed by heating in distilled water. A part of the material was stained with lactic-acid carmine before fixing in 75 per cent alcohol, whereas the remaining trematodes were stained with alum carmine after fixing in 75 per cent alcohol and washing in distilled water.

Among other parasites the author found trematodes belonging to the genus *Acanthatrium* Faust, 1919 [1], but their diagnosis did not fit any of the species hitherto known. It is the first case of finding representatives of the genus *Acanthatrium* in Europe.

Description of *Acanthatrium* (*Acanthatrium*) *tatrense* ~~sp.n.~~ Zdzitowiecki, 1967

Host: *Myotis mystacinus* (Leisler in Kühl, 1819).

Site of occurrence: Polish Tatra caves: Zbójnickie Okna Niżne, Groby, Pod Zamkiem and Kalacka.

Time of observation: December 1964 and December 1965.

Localization: jejunum (558 individuals) and, in mass invasions, the beginning of the ileum (49 individuals).

Extensiveness 45 per cent, intensiveness 2–228. Dimensions in microns (length in the first place): body dimensions 388–585 × 300–450, oral sucker 74–80 × 85–95, ventral sucker 65–79 × 66–79, pharynx 27–32 × 34–42 esophagus up to 90, caeca 78–148, pseudobursa 105–156 × 87–127, ovary 90–137 × 78–145, right testicle 78–130 × 88–144, left testicle 83–120 × 82–123, eggs 21–23 × 9–12.

Proportions: body length to width 1.23/1–1.87/1, length of oral sucker to body length 0.13/1–0.19/1, width of oral sucker to pharynx width 2.26/1–2.70/1, width of oral sucker to width of ventral sucker 1.17/1–1.40/1.

Position of ventral sucker 0.40–0.52 of body length, of genital sinus 0.26–0.36 of body length.

Body barrel-shaped, similar to that of *Prosthodendrium ascidia* (Beneden, 1873). Almost terminal oral sucker U-shaped. The ventral sucker, smaller than the oral one, generally occurs anterior to the body centre. Pharynx small, esophagus short, twisted. Its length is about 2–3 times larger than that of the pharynx. Caeca reach the anterior margins of the testicles or somewhat further. Either spherical or oval testicles lie on the sides of the ventral sucker. The right one is invariably larger. The oval pseudobursa extends along the body from the intestine bifurcation to the posterior margin of the ventral sucker and may reach even further to the posterior. It contains a twisted seminal vesicle having seemingly the appearance of a compressed V with a longer and thicker right branch.

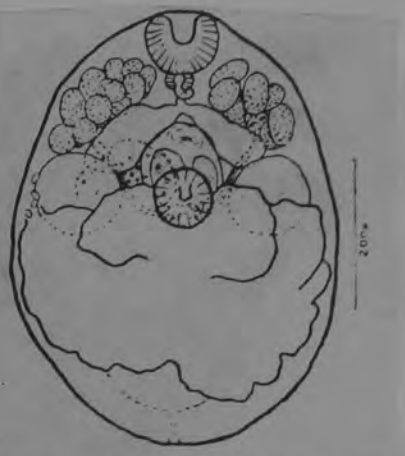


Fig. 1. *Acanthatrium* (*A*) *tatrense* sp.n. type specimen

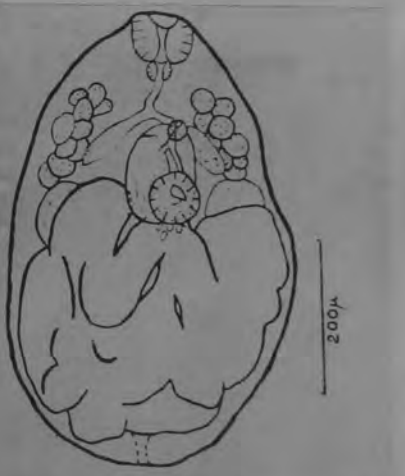


Fig. 2. *A.* (*A.*) *tatrense* sp.n. – specimen with turned genital sinus

Fig. 3. *A.* (*A.*) *tatrense* sp. n. – immature specimen

–OUKR–

The actual shape of the seminal vesicle is presented in Fig. 4. This scheme undergoes but slight modifications, otherwise than in representatives of the genus *Prosthodendrium* Dollfus, 1931 in which the course of the seminal vesicle within the pseudobursa is greatly variable. The genital sinus has the shape of a transverse fissure and is covered with minute prickles. It is surrounded by strong muscles. A duct has its outlet in the sinus and maybe it is its (transformed ?) continuation. Invariably it has an S-like course with a butt-like widening on the proximal end. The widening contains the opening of the male duct running from the pseudobursa and probably (the connection of duct lumina was not visible) the terminal part of the uterus. In one individual (stained with lactic-acid carmine) a part of the genital sinus turned out into a 26.5 × 24.5 μ pseudocirrus (Figs. 2 and 5). Within it a single (hermaphrodite ?) duct is visible. The ovary lies at the height of the ventral sucker on the right body side. Vitellogenes, invariably in two separate groups (of 10—18 each), lie laterally and dorsally in respect to the caeca, between the pharynx and the anterior testicle margins. Vitelline ducts run obliquely to the posterior in V shape. The right one runs ventrally in relation to the ovary, frequently near to its left margin, never between the right margin of the ovary and the body side. The vitellus receptacle and receptaculum seminis are situated directly behind the ovary. The uterus fills the second body half. In the posterior generally it does not reach the body end, whereas in the anterior it partly overlies the testicles. The terminal segment of the uterus is hardly visible. It runs ventrally in relation to the pseudobursa directly to the genital sinus or rather to the butt-like widening of the (hermaphrodite ?) duct. The eggs are very numerous. The excretion orifice is situated at the body terminal.

The excretion vesicle is V-shaped and its branches reach almost to the posterior margins of the testicles.

Fig. 4. *A. (A) tatrense* sp. n. — scheme of structure of pseudobursa and genital sinus

Fig. 5. *A. (A) tatrense* sp.n. — region of suckers and genital sinus turned out (laterally) into the pseudocirrus

Discussion

The species studied markedly differs from all the other representatives of the genus *Acanthatrium*. Most descriptions given by various authors [2] – [10] do not mention the occurrence of muscles near the genital sinus. They were observed only in *Acanthatrium* (A.) *nycteridis* Faust, 1919 [1]. This species in contrast to *Acanthatrium* (*A.*) *tatrense* sp.n., exhibits a distinctly trifid genital sinus. Further differences occur in the arming (in *Ac. tatrense* pricles are extremely small and numerous), in the shape of the seminal vesicle and in the distance between the pseudobursa and the body surface.

Type preparation of *Myotis mystacinus* ♀ No. 216 A, Tatra, Groby cave, December 15, 1964, jejunum.

Paratype preps. Nos. 202 A – B, 208 A, 216 B – L, 217 A, 238 A – C, 241 A and 202, 208, 209, 210, 215, 216, 217 and 219 in alcohol.

ACANTHATRIUM

Aliptrema Ruiz, 1954

Generic diagnosis. — Lecithodendriidae, Prosthodendriinae: Body small, subcylindrical to blunt-fusiform, spined. Oral sucker large, subterminal, followed by prepharynx, esophagus short, ceca terminating in testicular or posttesticular zone. Acetabulum smaller than oral sucker, equatorial. Testes placed one on each side of body behind acetabulum. No external seminal vesicle. Cirrus pouch retort-shaped, anterior or anterolateral to acetabulum, enclosing winding seminal vesicle and unarmed cirrus. Genital pore immediately preacetabular, median or slightly out of median line. Ovary submedian, pretesticular, in acetabular or preacetabular zone. Receptaculum seminis and Laurer's canal present. Uterus convoluted in posttesticular region, extending forward to near oral sucker; eggs operculate. Vitellaria consisting of large acini, extending in pretesticular lateral fields at middle third of body. Excretory vesicle Y-shaped, with short stem and long arms reaching oral sucker. Flame cell formula: $2[(3+3+3)+(3+3+3)] = 36$. Parasitic in buccal cavity and esophagus of snakes.

Genotype: *A. ribeiroi* Ruiz, 1954 (Pl. 105, Fig. 1272), in *Liophis miliaris*; Brazil.

ALIPTREMA

Allassogonoporinae Skarbilovich, 1943

Subfamily diagnosis. — Lecithodendriidae: Body flattened oval to pyriform, spinose. Oral sucker and pharynx small or moderately large, esophagus relatively long. Ceca half-long or long. Acetabulum somewhat larger than oral sucker, equatorial or pre-equatorial. Testes symmetrical or subsymmetrical, postacetabular. Cirrus pouch absent; seminal vesicle tubular, winding. Genital pore marginal, at level of acetabulum or behind it. Ovary submedian, in front of antiporal testis. Receptaculum seminis small or lacking (?). Vitellaria largely prececal, confluent in median line or not. Uterus occupying most of posttesticular region; eggs small. Excretory vesicle tubular or V-shaped.

Key to genera of Allassogonoporinae

Excretory vesicle tubular; ceca long seminal receptacle and Laurer's canal present ..... *Allassogonoporus*

Excretory vesicle V-shaped; ceca half-long; seminal receptacle and Laurer's canal absent(?) ..... *Myotitrema*

Allassogonoporus Olivier, 1938

Generic diagnosis. — Lecithodendriidae, Allassogonoporinae: Body slightly longer than broad, unspined. Oral sucker subterminal, moderately large, prepharynx short; esophagus comparatively long; ceca extending in a wide arc to near posterior extremity. Acetabulum near middle of ventral surface. Testes large, ovoid, symmetrical, intercecal, postacetabular. Seminal vesicle tubular, winding transversely in front of right or left testis. No cirrus pouch. Genital atrium marginal, near level of acetabulum. Ovary submedian, between acetabulum and antiporal testis. Seminal receptacle small, Laurer's canal present. Uterus convoluted in posttesticular region; eggs small, not embryonated. Vitelline follicles small, largely prececal or extending transversely at level of acetabulum, crossing commencement of ceca. Excretory vesicle tubular, with terminal pore. Intestinal parasites of muskrats and bats.

Genotype: *A. marginalis* Olivier, 1938 (Pl. 98, Fig. 1189), in *Ondatra zibethica;* Michigan.

Other species:

A. vespertilionis Macy, 1940, in *Myotis californicus caurinus;* Oregon. *Fluminicola* and *Limnophilus* (exper.) as intermediate hosts and hamster as experimental definitive host — Knight and Pratt (1955).

ALLASSOGONOPORUS Olivier, 1938

Family Lecithodendriidae ? Small distomes, slightly longer than broad. Cuticula without spines. Acetabulum near the middle of the ventral surface. Oral sucker subterminal. Prepharynx short. Esophagus extending almost to acetabulum. Intestinal ceca outside the testes, extending in a wide arc to the posterior part of the body. Excretory vesicle sac-like, extending anteriorly and dorsally between ends of ceca. Testes large and ovoid, symmetrically arranged in posterior half of worm. Seminal vesicle lateral, large, and elongate. No cirru or cirrus pouch. Oval ~~oval~~, lateral, and anterior to testes at or near acetabular level. Seminal receptacle small and spherical, between testes. Laurer's canal present. Uterus long and concoluted, often filling posterior half of worm. Vitellaria composed of many small follicles in a borad area anterior to middle of acetabulum. Genital atrium marginal, on either side of the body, near the level of acetabulum. Eggs small, numerous, and not embryonated.

Type species: A.marginalis Olivier, 1938
from muskrat in Michigan

I. Revision du genre ALLASSOGONOPORUS Olivier 1938

Le genre *Allassogonoporus* a été créé par Olivier (1938, p. 155) pour l'espèce *A. marginalis* trouvée dans l'intestin grêle de *Ondatra zibethica* (L.) [Michigan]. Il est caractérisé par une vésicule excrétrice médiane, longuement sacciforme, qui remonte jusqu'au niveau des testicules, par l'absence de cirre et de poche du cirre, et par le pore génital marginal, situé à peu près au niveau de l'acetabulum.

En 1940, Macy décrivait une espèce congénérique, *A. vespertilionis*, de l'intestin de *Myotis californicus caurinus* Miller [Oregon], et créait le genre *Myotitrema* avec *M. asymmetrica*, parasite intestinal de *Myotis lucifugus* (Le Conte) [Minnesota].

En 1955, Gilford considère ces deux dernières espèces comme synonymes de *A. marginalis* Olivier.

Les caractéristiques du générotype se retrouvent chez le *Distomum amphoraeformis* Mödlinger 1930, de *Myotis oxygnathus* Monticelli [Hongrie: Solymár], que nous avons eu l'occasion de redécrire (1956, pp. 691-692, fig. 2) d'après deux matériaux provenant de l'intestin de *Myotis mystacinus* (Kuhl) [Suisse: grotte de la Baume et grotte de Vers-chez-le-Brandt], récoltés par le Dr Villy Aellen. Nous avons attribué l'espèce de Modlinger au genre *Allassogonoporus*, ayant constaté qu'il n'existe ni cirre, ni poche du cirre, contrairement à l'opinion du descripteur hongrois qui croyait distinguer un organe copulateur: « Der kleine Cirrusbeutel befindet sich am rechten Körperrand » (1930, p. 203). La vésicule séminale est libre dans le parenchyme [1].

Yamaguti (1958) n'a probablement pas eu connaissance de notre redescription, ni de la note de Gilford [2], puisqu'il érige le nouveau genre *Moedlingeria*, dans les *Parabascinae* Yamag. 1958, pour le *Distomum amphoraeformis* (pp. 818-819) et qu'il maintient le genre *Myotitrema* (p. 813) à côté de *Allassogonoporus* (p. 812) dans les *Allassogonoporinae* Skarbilovich 1943. Ces deux genres tombent donc comme synonymes du dernier.

Les deux espèces d'*Allassogonoporus* apparaissent inféodées au genre *Myotis* Raup, si l'on excepte l'hébergement probablement accidentel de *A. marginalis* par le Rat musqué. Elles peuvent être distinguées par le rapport diamétral des ventouses et par la distribution géographique:

Corps ovale à piriforme. Acetabulum un peu plus grand que la ventouse buccale, mais de diamètre à peu près égal à celui de l'ovaire. États-Unis . . . . . *A. marginalis*

Corps ovale à pentagonal. Acetabulum deux fois plus grand que la ventouse buccale et de diamètre supérieur à celui de l'ovaire. Europe *A. amphoraeformis*

[1] D'après Mme J. Hurková (1959, p. 29) l'espèce de Modlinger aurait été attribuée au genre *Prosotocus* par Skarbilovich *in* Skrjabin 1958! Cette attribution n'est pas mentionnée par Yamaguti (1958, p. 393). Les *Prosotocinae* Yamag. 1958 sont des parasites d'Amphibiens, sauf *P. vespertilionis* Mödlinger 1930, de *Myotis myotis* (Borkhausen).

[2] Cet auteur n'est pas cité dans la bibliographie du « Systema Helminthum », ni notre travail de 1956.

-over-

Skarbilovich (1943) avait créé la sous-famille des *Allassogonoporinae* pour y inclure *Allassogonoporus* Olivier 1938. Macy et Moore (1954) lui avaient attribué leur nouveau genre *Cephalophallus* (avec l'espèce-type *C. obscurus*, de *Mustela vison* Schreber), tandis que Yamaguti (1958) érigeait la sous-famille des *Cephalophallinae*. D'après la clé proposée à la page 810 du « Systema Helminthum », cette dernière ne se distinguerait des *Allassogonoporinae* que par la situation des vitellogènes dans la zone acétabulaire (au lieu de préacétabulaire) et par la localisation plus antérieure du pore génital par rapport à la ventouse ventrale. Ces différences sont insignifiantes eu égard aux caractères communs aux deux sous-familles: absence de poche du cirre (vésicule séminale libre dans le parenchyme), pore génital marginal, vésicule excrétrice médiane, longuement sacciforme. En conséquence, les *Cephalophallinae* tombent en synonymie avec les *Allassogonoporinae*, dont les deux genres se distinguent par les caractères suivants:

Allassogonoporus: Caeca longs, se terminant en arrière des testicules. Vitellogènes préacétabulaires, occupant la zone précaecale et constituant deux groupes plus ou moins contigus sur la ligne médiane. Pore génital marginal, dans la zone acétabulaire ou plus en arrière. Parasites de Chiroptères (exceptionnellement du Rat musqué).

Cephalophallus: Caeca courts, se terminant au-devant des testicules. Vitellogènes paracétabulaires, constituant deux groupes latéraux localisés à l'extrémité des caeca. Pore génital marginal, au niveau du prépharynx. Parasite du Vison.

Dubois, 1963

Clé de détermination des espèces.

1. Pore génital postérieur à la mi-longueur du corps, près de laquelle se situe la ventouse ventrale. Diamètre de la ventouse buccale: 90-120 μ; du pharynx: 40-70 μ. Hôte: *Ondatra zibethicus* (L.). Etats-Unis. *A. marginalis* Olivier 1938

– Pore génital antérieur (ou juste antérieur) à la mi-longueur du corps, en avant de laquelle se situe la ventouse ventrale (aux 2/5 de la longueur du corps). Diamètre de la ventouse buccale: 52-84 μ; du pharynx: 30-55 μ. Hôtes: Chiroptères *(Myotis)* 2

2. Corps ovale. Ventouse ventrale de contour circulaire (diamètre: 90-100 μ). Pore génital s'ouvrant au niveau de son bord postérieur. Testicules postéquatoriaux, subsphériques (diamètre: 110-120 μ). Etats-Unis.
A. vespertilionis Macy 1940

– Corps ovale à pentagonal. Ventouse ventrale de contour elliptique ou circulaire (diamètre: 100-130/130-162 μ). Pore génital s'ouvrant au niveau de sa première moitié. Testicules équatoriaux, ovoïdes (diamètre: 105-160/160-200 μ). Europe. . . . . *A. amphoraeformis* (Mödlinger 1930)

From Dubois, 1956

(Olivier, 1938) Macy, 1940

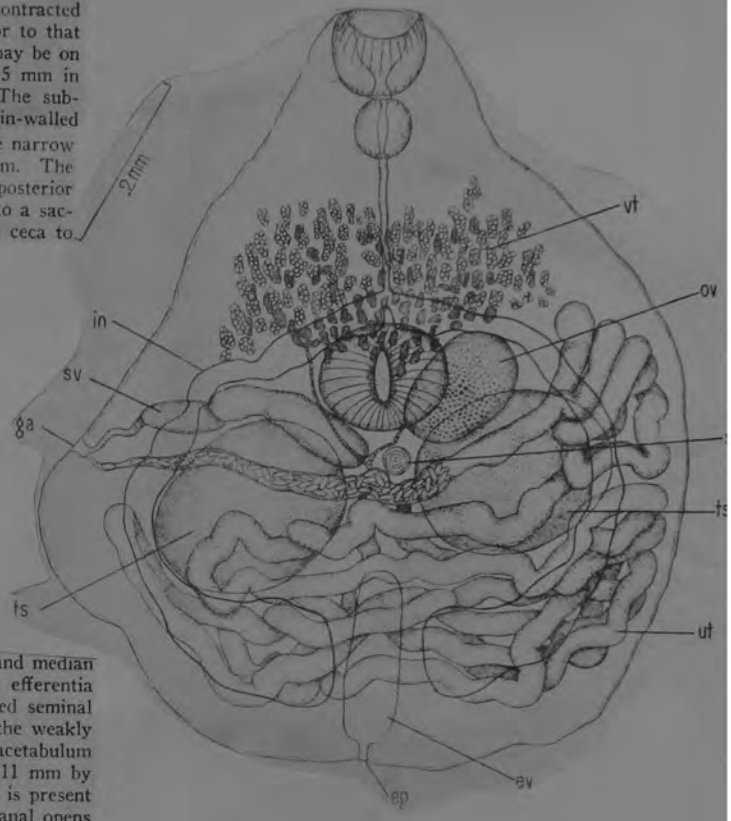
Allassogonoporus, genus emend.

Generic diagnosis: Family Lecithodendriidae. Small distomes, slightly longer than broad. Cuticular spines present or absent. Acetabulum equatorial or pre-equatorial. Oral sucker subterminal. Prepharynx short. Esophagus extending almost to the acetabulum. Intestinal ceca outside the testes or overlapping them, extending in a wide arc to the posterior region of the body. Excretory vesicle sac-like, extending anteriorly and dorsally between the ends of the ceca. Testes large and ovoid, symmetrically arranged in the posterior half of the worm. Seminal vesicle lateral, large, and elongate. No cirrus or cirrus pouch. Ovary oval, often wider than long, lateral and anterior to the testes, at or near the acetabular level. Seminal receptacle small and spherical, between two testes. Laurer's canal present. Uterus long and convoluted. Vitellaria composed of many small follicles in single field across the body near the intestinal fork.

Allassogonoporus marginalis ~~n. sp.~~ Oliver, 1938

(Fig. 1)

Specific diagnosis: Genus *Allassogonoporus*. Characteristics of the genus. Mature worms 0.64–0.90 mm long and 0.59–0.80 mm broad. No spines could be found on the specimens. The outline of the worm is asymmetrical in contracted specimens because the genital atrium is lateral at a level slightly posterior to that of the acetabulum. The genital atrium, which is about 15 μ in diameter, may be on either the right or left margin of the worm. The acetabulum is 0.11–0.15 mm in diameter and is located slightly anterior to the middle of the worm. The subterminal oral sucker is 0.09–0.12 mm in diameter. There is a short, thin-walled prepharynx. The pharynx is globular and 0.04–0.07 mm in diameter. The narrow esophagus extends to near the level of the anterior margin of the acetabulum. The intestinal ceca are large and conspicuous, extending in wide arcs to the posterior region where they converge. The excretory pore is terminal and opens into a sac-shaped excretory vesicle which extends anteriorly between the ends of the ceca to receive two collecting ducts. The testes are ovoid, entire, post-ovarian, and median to the ceca. They measure 0.10–0.20 mm by 0.15–0.24 mm. The vasa efferentia unite to form a short vas deferens leading to the elongate and convoluted seminal vesicle which extends from the region of the female genital complex to the weakly muscular ejaculatory duct. The ovary is lateral and slightly behind the acetabulum on the side of the body opposite the genital atrium. It measures 0.08–0.11 mm by 0.12–0.19 mm. A spherical seminal receptacle, 0.03–0.05 mm in diameter, is present between the testes and ventral to the female genital complex. Laurer's canal opens dorsally. The large uterine loops are in the posterior half of the worm ventral to the testes and ceca. The terminal part of the uterus traverses the worm at the level of the testes to open into the metraterm. The vitellaria consist of many irregularly shaped follicles which lie dorsally in an area extending laterally about three-fourths the distance from the median plane to the margins of the worm and from the second third of the esophagus back to the middle of the acetabulum. The eggs are operculate and not embryonated. Measurements of twenty-one eggs from four specimens ranged from 10 μ by 22 μ to 13 μ by 25 μ.



The worms were fixed in a more or less contracted state and this should be taken into account when evaluating measurements and descriptions. Unless otherwise indicated, measurements given represent the range in size found in ten mounted specimens.

Host: *Ondatra zibethica* L.

Habitat: Small intestine.

Locality: Whitehall, Michigan.

Type specimens: U. S. Nat. Mus. Helm. Coll.

Allassogonoporus does not have a cirrus sac and in this respect it is similar to seven genera in the LECITHODENDRIIDAE: *Lecithodendrium*, *Anchitrema*, *Castroia*, *Ganeo*, *Lecithoporus*, *Mesodendrium*, and *Pycnoporus*. These genera either have no cirrus sac or have a pseudocirrus sac. *Allassogonoporus* differs from both *Anchitrema* and *Ganeo* in the position of the genital pore, the shape of the excretory bladder, the relation of the ovary to the testes, and the position of the vitellaria. The new genus differs from *Lecithodendrium*, *Lecithoporus*, *Mesodendrium*, and *Pycnoporus* in the position of the genital pore, shape of the excretory bladder, and length of the ceca. *Allassogonoporus* differs from *Castroia* in the position of the genital pore, length of the ceca, and shape of the seminal vesicle.

Lecithodendriidae

C. Subfamily *Allassogonoporinae* Skarbilovich, 1947

7. ***Allassogonoporus amphoraeformis*** (Mödlinger, 1930) Dubois, 1955 (fig. 6)

Synonyms: *Distomum amphoraeformis* Mödlinger, 1930; *Prosotocus amphoraeformis* (Mödlinger, 1930) Skarbilovich, 1948 in Skrjabin, 1948.

Host and locality: *Myotis mystacinus* Kuhl – 4 ♀♀ ad and 1 ♀ juv., summer locality in nature reserve Velký Tisý, district Třeboň, Southern Bohemia (15. 5., 26. 8. 1957).

Location: thin intestine.

Intensity of invasion: 4, 1, 2, 2 and 4 specimens.

(Note: Four specimens of this fluke from *Myotis myotis* Borkh. in place of hibernation in Harmanec-cave, district Banská Bystrica, Middle Slovakia, found Dr. Ryšavý-1955, who made kindly these trematodes avalaible to me.

Description: Flukes of pentagonal body form; body length 0.473 to 0.647 mm., maximal width 0.358 to 0.554 mm. Oral sucker subterminal, curcular in shape, 0.048 to 0.066 mm. in diameter. Pharynx round, 0.025 to 0.044 mm. in diameter. Esofagus thin direct, extending to the anterior bord of ventral sucker, where coeca begin. Ventral sucker large, musculate, round in shape with longish oral porus, 0.100 to 0.128 mm. in diameter. Genital porus lateral, on the left margine of body, level with ventral sucker. Cirrus pouch absent. Testes large, oval, extending laterally to ventral sucker or behind it, 0.096 to 0.109 mm. broad by 0.156 to 0.164 mm. long. Ovary smaller than the ventral sucker and testes, 0.087 to 0.090 mm. long by 0.128 mm. wide. Uterus having many folds, occur in the posterior part of

body, ending lateraly in the vicinity of genital porus. Vitellaria covering the bifurcation of coeca, composed of many small glands.

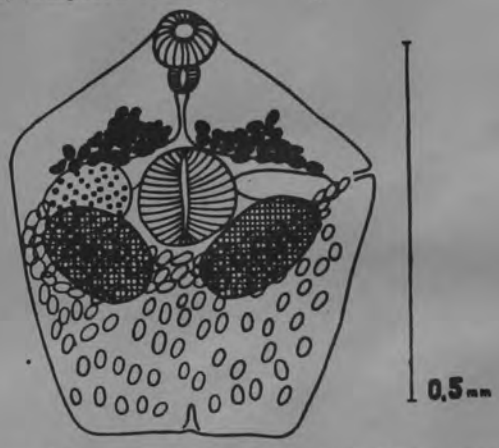


Fig. 6. *Allassogonoporus amphoraeformis* (Mödlinger, 1930) Dubois, 1955.

Allassogonoporus amphoraeformis (Mödlinger, 1930) Dubois, 1955 was found for the first time in ČSR in the summer colony of *Myotis mystacinus* Kuhl in nature reserve Velký Tisy in South Bohemia (Hůrkova 1959). It has been neither recovered in the same host from two other Bohemian localites nor in other bat species in Bohemia. In Slovakia it was found in *Myotis myotis* Borkh. in one locality near Banská Bystrica (leg. Dr. Ryšavý, 1955).

From Hurkova, 1959

Allassogonoporus amphoraeformis (Mödlinger, 1930) (Fig. 4C)

Syn.: *Distomum amphoraeformis* Mödlinger, 1930; *Prostocus amphoraeformis* Skarbilovich, 1947; *Moedlingeria amphoraeformis* Yamaguti, 1958.

Hosts:

Myotis mystacinus mystacinus Leisl., *Myotis myotis myotis* Borkh., *Myotis blythi oxygnathus* Mont.

Distribution:

Czechoslovakia, Hungary, Switzerland (Europe).

My material includes 38 specimens from 6 host species from 6 localities in Czechoslovakia:

M. mystacinus: farm Šaloun (Jindř. Hradec d.), 15. V. 57 — 3 specimens, 26. VIII. 57 — 5 specimens, Bílá Desná 24. II. 58 — 11 specimens, Lednice (Břeclav d.), 18. VI. 58 — 6 specimens.
+ *M. daubentoni*: Bílá Desná (Jablonec upon Nisa d.), 24. II. 58 — 3 specimens, Potěšil fishpond (Jindř. Hradec d.), 4. VII. 59 — 1 specimen.
+ *P. austriacus*: Čáslavice (Třebíč d.), 13. VIII. 57 — 2 specimens.
+ *M. emarginatus*: Rozhraní (Svitavy d.), 4. III. 59 — 3 specimens.
M. myotis: Harmanec cave (Banská Bystrica d.), 25. II. 55 — 4 specimens.

Description (based on 30 specimens): Body length 0.369 to 0.765 mm., body width 0.270 to 0.612 mm. Oral sucker 0.045 to 0.072 mm in diameter. Farynx 0.030 to 0.040 mm. on diameter. Ventral sucker 0.081 to 0.135 mm. in diameter. Left testis 0.108 to 0.180 by 0.076 to 0.135 mm., right testis 0.120 to 0.198 by 0.081 to 0.135 mm. Ovary 0.081 to 0.135 by 0.063 to 0.090 mm. Eggs 0.020 to 0.026 by 0.008 to 0.013 mm.

Small trematodes of typical "amphora" — form of body. Oral sucker small, round with round oral porus. Farynx relatively large, musculate, esophagus short, flowing in front of the anterior margin of ventral sucker into two ceca, forming large arches, reaching up to the half of the posterior part of body the ventral sucker. Ventral sucker almost twice larger in diameter than the oral. Ovary lateral, right or left to the ventral sucker, opposite to vesiculum seminalis, extending cross in the level of the ventral sucker. Testes large, eggform or oval, postacetabular. Uterus folded enough, making in its posterior part typical cross row, surrounding posteriorly the ventral sucker. Genital pore lying on the right or left border of body, level with a middle of ventral sucker or slightly in front of it. Eggs with distinctive operculum on its narrowed end.

FROM HURKOVA, 1963

Allassogonoporus amphoraeformis (Modlinger 1930) Dubois 1956.

[Syn. *Distomum amphoraeformis* Modlinger 1930.]

Trois exemplaires ont été recueillis dans l'intestin de deux *Myotis daubentoni* (Kuhl) capturés par Cl. Amoudruz à Dompierre, Dombes, France, le 6.IX. 1962 (Mus. Genève 1010.61 et 1010.63). Les chauves-souris hébergeaient aussi un ou deux spécimens jeunes de *Plagiorchis (P.) vespertilionis* (Müller).

Longueur: 0,60-0,68 mm; largeur: 0,37-0,42 mm.

Diamètres de la ventouse buccale: 73-90/73-84 μ; de la ventouse ventrale: 105-120/120-145 μ; du pharynx: 47/45 μ; de l'ovaire: 85-90/94-112 μ; des testicules: 110-125/130-160 μ; des œufs: 21-24/11-12 μ. Situation de la ventouse ventrale: aux 33-38/100 de la longueur du corps.

Allassogonoporus amphoraeformis a été retrouvé par Mme J. HŮRKOVÁ (1959) qui en donne une description d'après 13 spécimens recueillis dans cinq *Myotis mystacinus* (Kuhl) de la Bohême méridionale. L'auteur mentionne encore la trouvaille par le Dr Ryšavý de quatre exemplaires provenant d'un *Myotis myotis* (Borkhausen) de Slovaquie.

FROM DUBOIS, 1963

DUBOIS, 1956

Allassogonoporus amphoraeformis (Mödlinger 1930) ~~comb. nov.~~.

[Syn. *Distomum amphoraeformis* Mödlinger 1930.]

(Fig. 2.)

A notre connaissance, ce Trématode n'a pas été retrouvé. V. Aellen en a recueilli de nombreux exemplaires dans l'intestin d'un *Myotis mystacinus mystacinus* (Kuhl), dans la grotte de la Baume, 6. XI. 1955 (coll. Aellen nº 714). Un autre lot de quatre exemplaires (moins bien conservés), provenant du même hôte, avait été récolté par V. Aellen dans la grotte de Vers-chez-le-Brandt, 24. II. 1949 (coll. Muséum La Chaux-de-Fonds; V. Aellen leg.).

L'habitus de ces Vers est tel que le décrit Mödlinger (1930, pl. XX, fig. 2): le contour du corps est très caractéristique, étant celui d'un ovale tendant vers le pentagone (largeur maximum au niveau de l'acetabulum, c'est-à-dire aux 2/5; bord postérieur tronqué ou plus ou moins arrondi). Une anse de l'utérus, bourrée d'œufs et disposée comme un collier, traverse le corps derrière l'acetabulum.

		d'après Mödlinger
Longueur	0,60-0,72 mm	0,58 mm
Largeur	0,42-0,54	0,39
Diamètres:		
ventouse buccale	65-84/60-84 μ	52-82 μ
ventouse ventrale [1]	100-130/130-162	140
pharynx	40-52	55
ovaire	60-100/90-130	130
testicules	105-160/160-200	185/266 (?) [2]
œufs	24-26/10-12	26/11
Longueur de l'œsophage	60-100 μ	très court
Situation de la ventouse ventrale	35-43/100 (moyenne: 39/100)	—

[1] Sur un seul exemplaire du matériel nº 714, le contour de la ventouse ventrale était circulaire (diamètre 130 μ). Sur les spécimens du lot de la grotte de Vers-chez-le-Brandt, il était presque circulaire (135-138/141-146 μ).

[2] Ces dimensions sont sûrement excessives (la longueur des testicules atteindrait presque la moitié de celle du corps, ce qui est contraire aux relations exprimées par la figure 2, pl. XX).

Fig. 2.
Allassogonoporus amphoraeformis (Mödlinger), de *Myotis mystacinus mystacinus* (Kuhl). Vue ventrale. Longueur: 0,64 mm.

Le corps, plus long que large (sauf à l'état contracté), est couvert de petites épines intracuticulaires, disposées régulièrement en quinconce et visibles jusqu'au niveau du bord postérieur des testicules. Le contour de la ventouse ventrale (très musculeuse et située aux 2/5 de la longueur du corps) est elliptique ou circulaire; celui de la ventouse buccale est circulaire. Le pharynx est petit, suivi d'un court œsophage; les caeca divergent et s'orientent transversalement, puis se recourbent pour circonscrire les testicules et s'infléchir en direction de la ligne médiane, où ils s'affrontent, séparés seulement par la vésicule excrétrice médiane, simple, longuement sacciforme, qui remonte jusqu'au bord postérieur des tes-

- OVER -

ticules. Situé devant l'un de ceux-ci, l'ovaire, latéral (par rapport auquel la ligne médiane est tangente), est dextre ou sénestre, et opposé à la vésicule séminale prétesticulaire, qui s'allonge transversalement dans la zone de la ventouse ventrale. Les testicules sont ovoïdes, équatoriaux, post-acétabulaires, symétriquement disposés et contigus, orientés transversalement ou selon les deux branches d'un V très ouvert. Au niveau de leur bord frontal, on distingue un réceptacle séminal médian ou submédian. Les follicules vitellogènes, accumulés devant les caeca, constituent deux grappes antérieures à l'équateur de l'acetabulum. Il n'existe ni cirre, ni poche du cirre. Le pore génital, marginal, dextre ou sénestre, s'ouvre à un niveau compris entre le front et le centre de la ventouse ventrale.

Le genre *Allassogonoporus* a été créé par OLIVIER (1938) pour *A. marginalis*, parasite du Rat musqué, *Ondatra zibethicus* (L.). En 1940, MACY décrivait une espèce congénérique, *A. vespertilionis*, hébergée par *Myotis californicus caurinus* Miller, et amendait la diagnose générique. Celle-ci répond à tous les caractères du *Distomum amphoraeformis* de MÖDLINGER, qui devient ainsi le troisième représentant du genre *Allassogonoporus*. (Cf. note, p. 695.)

FROM DUBOIS, 1956

Allassogonoporus vespertilionis n. sp. Macy, 1940

Specific diagnosis: Genus *Allassogonoporus*. Having the characters of the genus as here emended. Body broad, somewhat elongated, 0.67–0.81 mm. long by 0.41–0.58 mm. broad. All of the parenchyma cells of the living and fixed specimens were found to be large and remarkably vacuolated. Cuticula on anterior third of body with heavy, regularly arranged scale-like spines. Oral sucker subterminal, 0.064–0.078 mm. in diameter. Prepharynx exceedingly short, membranous. Pharynx 0.03–0.04 mm. in diameter, usually semi-spherical. Esophagus thin, elongate, 0.07–0.11 mm. long. Intestinal fork situated immediately anterior to acetabulum. Intestinal ceca long, reaching to within 0.14–0.23 mm. of posterior end of body, overlapping outer part of testes. Acetabulum 0.09–0.1 mm. in diameter, anterior margin 0.21–0.34 mm. from the anterior end of the body. The acetabulum has a central, longitudinal groove, which is characteristic.

Testes large, subspherical, postequatorial, 0.11–0.12 mm. in diameter. The seminal vesicle lies free in the body cavity. It begins at a point just posterior to the acetabulum and extends in a somewhat sinuous course outward to the genital pore. No cirrus or cirrus pouch is present.

Follicles of the vitellaria extend in a single, narrow field across the body at the level of the acetabulum. Ovary situated just behind the ventral sucker and on the left side of the body, 0.085–0.11 mm. wide by 0.064–0.082 mm. long. Seminal receptacle 0.031–0.05 mm. in diameter. Uterine slings loose, metraterm parallel to seminal vesicle. The genital pore on the right body margin just anterior to the body middle. Only in one instance was there found any structure resembling the genital atrium described for *A. marginalis*. Eggs small, brownish, of the usual Lecithodendriid type, 0.027 mm. long by 0.013 mm. wide.

Due to the heavily vacuolated parenchyma and partial covering of heavy spines, it was not possible to study the finer parts of the excretory system. Excretory bladder a simple, elongate sac, emptying at the terminal excretory pore, and extending forward between the testes. Even in prepared slides, the excretory bladder is plainly seen. From sections it was plainly determined that the excretory bladder does not fork at its anterior end. Other characteristics were also checked by sections.

Host: *Myotis californicus caurinus* Miller.

Habitat: Intestine.

Locality: McMinnville, Oregon.

Type specimens: U. S. Nat. Mus. Helm. Coll. and author's coll.

Since some of the character of the species are at variance with those given for the genus *Allassogonoporus* by Olivier, a slight emendation is necessary.

Discussion

Allassagonoporus vespertilionis may be differentiated from *A. marginalis* by several characters, especially the presence of heavy spines on the former, which are lacking on the latter. In *A. vespertilionis*, the zone of the vitellaria is farther back on the body, being located between the ovary and the intestinal fork. In one case the follicles reached the testes. In *A. marginalis* the vitellaria reach to a point halfway between the intestinal fork and the pharynx, and the field is longer.

In *A. vespertilionis*, the acetabulum and genital pore are pre-equatorial, whereas in *A. marginalis* they appear to be equatorial or post-equatorial.

This represents another case in which closely related species of trematodes are found in bats and muskrats. *Urotrema schillingeri* Price, 1931 (=*lasiurensis* Alicata, 1932?) described from a muskrat is common in

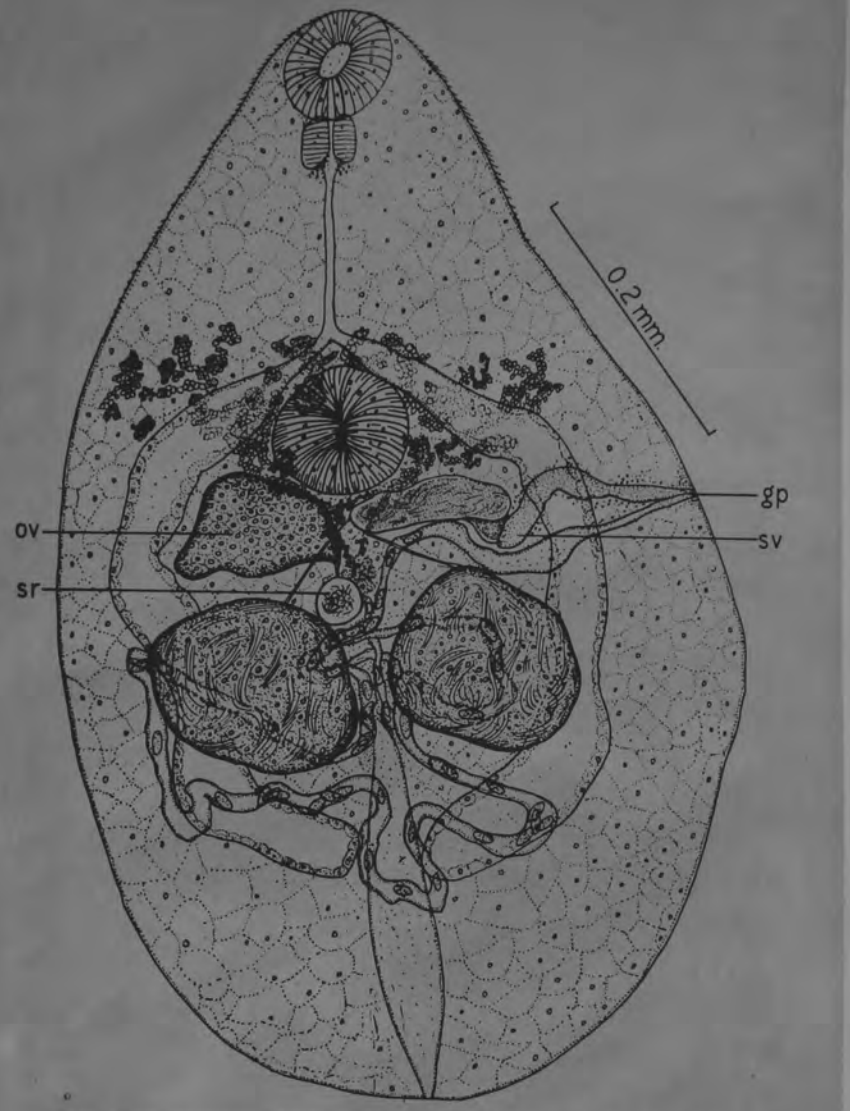


PLATE. *Allassogonoporus vesperitilionis*. Dorsal view. Drawn with the aid of the camera lucida. *gp*, genital pore; *ov*, ovary; *sr*, seminal receptacle; *sv*, seminal vesicle.

ALLASSOGONOPORUS

ANENTEROTREMATIDAE ~~n. fam.~~ YAMAGUTI, 1958

Family diagnosis. — Body oval or fusiform, with head collar. Oral sucker and acetabulum strongly developed. No trace of pharynx, esophagus and ceca. Testes symmetrical, postacetabular; cirrus pouch present. Genital pore ventral, median, between two suckers. Ovary posttesticular. Receptaculum seminis and Laurer's canal present. Vitellaria in symmetrical groups behind testes. Uterus mostly in hindbody. Excretory vesicle saccular. Parasitic in mammals.

Type genus: *Anenterotrema* Stunkard, 1938.

obviously based on macerated specimens

Anenterotrema Stunkard, 1938

Generic diagnosis. — Anenterotrematidae: Body very small, fusiform, broadest about middle, with a head collar ending ventrally on each side in a small muscular papilla. Acetabulum large, pre-equatorial. Oral sucker subterminal. No trace of pharynx, esophagus and ceca. Testes large, symmetrical, in middle third of body, postacetabular. Cirrus pouch oval, anterodorsal to acetabulum, containing coiled seminal vesicle and ejaculatory duct. Genital pore median between two suckers. Ovary rounded, dorsal, slightly to left of median line, between and behind testes. Receptaculum seminis small, Laurer's canal present. Uterus occupying most of hindbody; eggs small, those in terminal part of uterus containing miracidia. Vitellaria forming symmetrical groups just behind testes among uterine coils. Excretory vesicle saccular, reaching halfway from posterior extremity to ovary; pore terminal. Parasitic in Chiroptera.

Genotype: *A. auritum* Stunkard, 1938 (Pl. 82, Fig. 998), in *Micronycteris megalotis mexicana;* Yucatan.

Other species: *A. singulare* Stunkard, 1938, in *Natalus mexicanus;* Yucatan.

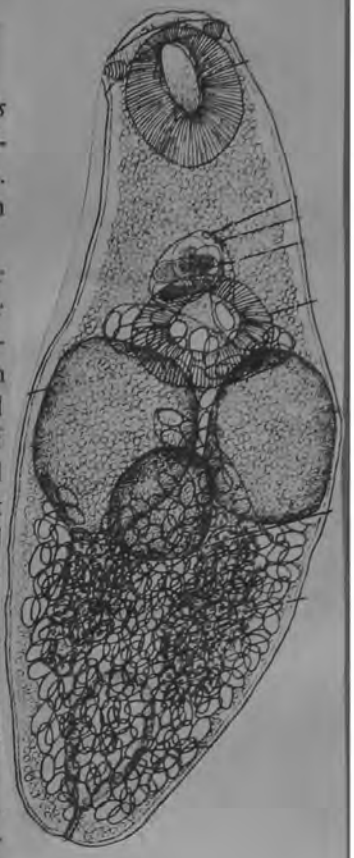
Tulane University, New Orleans, Louisiana, USA 70118

YAMAGUTI, SATYU, 1969. *Special modes of nutrition in some digenetic trematodes.* J. Fish. Res. Bd. Canada 26: 845–848.

It is proposed that the unusual density of the parenchymal cells, especially of the nuclei, in *Anenterotrema* species lacking a digestive system is concerned with the nutrition of these trematodes. Another example of a special mode of nutrition is in encysted didymozoids, in which the parasite is nourished by the blood of the host fish under a protected condition.

Anenterotrema auritum ~~n. g., n. sp.~~ Stunkard, 1938

(Fig. 4)



The material consisted of 25 specimens (vial 171) from the bat, *Micronycteris megalotis mexicana* Miller, collected July 31 at Xmahit Cave, Tekax and 34 specimens (vial 193) from the same host, collected August 11 at Xconsacab, Tizamin. Twenty-three of the worms were prepared as whole mounts and six were cut in serial sections.

The specimens are oval, with the region of greatest width at the testicular zone near the middle of the body. Usually the anterior region is narrower than the posterior, which is distended with eggs. The worms are flattened, sometimes concave ventrally, and oval in cross section. They measure 0.45-0.8 mm. in length and 0.2-0.34 mm. in width. The specimen selected as type is the largest one and is well extended. It is 0.8 mm. long and 0.3 mm. wide. Across the dorsal side of the anterior end there is a thickened ridge which extends ventrad on either side and ends in a small muscular papilla. There may be thickenings on the ridge, but whether they represent other papillae could not be determined. The two lateral papillae are often conspicuous and recall similar structures of the papillose Allocreadiidae as described by Hopkins (1934). In the present specimens, however the ridge and papillae appear to be a part of the body wall and independent of the anterior sucker. The ridge may be flattened and extended in front of the sucker or the sucker may be protruded with the disappearance of the ridge. In either of these conditions, the papillae may not be distinguishable. The cuticula in most of the specimens is frayed and appears to be disintegrated; no spines were observed. The acetabulum is situated about one-third the body length from the anterior end. In contracted specimens it may be more anterior while, if the anterior end is protruded, it may lie farther back. It measures 0.1-0.125 mm. in diameter.

There appears to be no distinct alimentary tract in these worms. In none of the stained specimens, whether prepared as whole mounts or in serial sections, is there any trace of a pharynx, esophagus, or digestive ceca. The anterior sucker is 0.1-0.13 mm. in diameter; its opening is subterminal. The wall of the sucker is continuous except for the opening to the exterior and its structure is similar to that of the acetabulum. Around the sucker there are gaps in the parenchyma, which appear as sinuses or lacunae, although there is the possibility that, due to delayed or poor fixation, they are remains of disintegrated digestive ceca. This interpretation appears to be precluded, however, by the presence of similar spaces throughout the body, particularly around the acetabulum, and by the persistence of delicate structures which presumably would decompose more rapidly. One may postulate the disintegration and disappearance of the digestive system after the death of the worms by the action of enzymes present in the lumen or cells of the ceca, but such an explanation would not account for the absence of a pharynx and the continuous wall of the anterior sucker. The commissure of the nervous system and the nuclei of the associated cells are well preserved. In the lateral areas behind the anterior sucker there are masses of nuclei, sometimes aligned in rows but their irregular arrangement confutes rather than supports the suggestion that they are the remains of digestive ceca.

The excretory pore is terminal. The bladder is saccate and extends forward between the coils of the uterus about one-half the distance to the ovary. In several of the specimens it is filled with fluid and almost spherical. In a worm cut in frontal sections the vesicle measures 0.09 mm. in length. The course and subdivisions of the collecting tubules could not be traced although they appear frequently in sections.

The testes are large, opposite, symmetrical, and situated in the middle third of the body. They are spherical to oval, usually longer in the anteroposterior axis

(over)

and 0.1-0.19 mm. in diameter. Sperm ducts arise from the anteromedian ends of the testes and pass forward and mediad, uniting as they enter the cirrus sac. The cirrus sac is oval, 0.05-0.08 mm. in length and 0.04-0.07 mm. in diameter. It is slightly lateral, usually on the left side, in front of and partially above the acetabulum. In the cirrus sac the sperm duct enlarges to form a much coiled seminal vesicle, and the ejaculatory duct leads to the common genital pore. The cirrus is partially extruded in one specimen.

The ovary is dorsal, usually slightly to the left, between and behind the testes, although it may lie farther forward if the specimen is contracted. It is spherical to oval, 0.06-0.12 mm. in diameter. The oviduct arises at the posteromedian face of the ovary, passes ventrad and toward the right where it enters the ootype. In two of the sectioned worms it is possible to recognize a small seminal receptacle on the antovarian side of the ootype and in one of them a strand of spermatozoa, extending toward the dorsal wall, probably represents Laurer's canal. The uterus passes in a winding course backward to the posterior end of the body and then forward, its loops filling the caudal third of the body. The ascending limb passes above and between the testes. In front of these organs it crosses the body transversely in an S-shaped double loop and opens into the metraterm which continues forward on the side opposite the cirrus sac and opens at the genital pore beside or in front of the male orifice. The genital pore is median, a short distance anterior to the acetabulum. The vitelline follicles occupy lateral fields among the uterine coils. They extend forward as far as the ovary and backward to the level of the excretory vesicle. Their ducts could not be traced to the ootype. The eggs are oval, operculate, 0.034-0.036 mm. by 0.02-0.023 mm., and those in the terminal part of the uterus contain miracidia.

DISCUSSION

The specimens are in such poor state of preservation that their structure can not be fully determined, and the description is therefore incomplete. A systematic allocation is accordingly impossible. The worms are undoubtedly members of an undescribed species which can not be referred to any existing genus. A new genus *Anenterotrema* is erected to contain the species *A. auritum,* which is designated as type of the genus. It may belong to the Lecithodendriidae or the Allocreadiidae, but it can not be included in either family as they are constituted at present.

A somewhat similar fluke was described from a Hungarian bat by Mödlinger (1930). In this species, which he called *Distomum mehelÿi,* the digestive system is inadequately described. From the account it appears that the ceca arise directly from the oral sucker and do not extend behind it. It is not improbable that *D. mehelÿi* and *A. auritum* are related species although study of better-preserved material is indispensable if a satisfactory comparison is to be made.

Lecithodendriidae

Anenterotrema singulare ~~n. sp.~~ Stunkard, 1938

(Fig. 5)

The material of this species consisted of a single specimen (vial 42) from the bat, *Natalus mexicanus* Miller, collected June 22 at Balaam Canche Cave, Chichen Itza.

The worm was stained, mounted *in toto*, and drawn (Fig. 5). In order to study the internal structures it was then unmounted and cut in serial sections. It measured 0.625 mm. in length and 0.2 mm. in greatest width. Its shape and appearance are portrayed in the figure. The anterior end is protruded and folded, forming a ventral groove which becomes continuous with the aperture of the anterior sucker. Among the specimens of *A. auritum*, there are a few in which a similar condition was noted. The cuticula is thin and no spines are present. The acetabulum is situated near the caudal end of the anterior half of the body and measures 0.096 mm. long and 0.092 mm. wide. Sections show it to be surrounded by a large empty space.

The anterior sucker measures 0.116 mm. long and 0.1 mm. wide. It has a continuous wall and is surrounded by a large open space, similar to that about the acetabulum. No pharynx or digestive ceca could be distinguished.

The excretory pore is terminal; the vesicle is saccate and extends forward among the coils of the uterus almost half way to the ovary. Details of the system could not be traced.

The testes are almost opposite and in the middle of the body; their anterior ends lie in the acetabular zone. The right testis is 0.11 mm. long and 0.094 mm. wide. The left testis, which is slightly anterior to the right one, is 0.115 mm. long and 0.092 mm. wide. The sperm ducts arise at the anteromedian faces of the testes and unite to form a common duct which enters the posterior end of the cirrus sac. Within the sac the duct expands to form a large, coiled, seminal vesicle and there is a large, long, straight duct which leads to the genital pore. The cirrus sac measures 0.15 mm. long and 0.076 mm. wide; its caudal end is above the posterior end of the acetabulum. The genital pore is median, and a short distance behind the anterior sucker.

The ovary is almost spherical, 0.072 by 0.07 mm. in diameter. It is dorsal and slightly to the left of the midline; the oviduct arises at the posteromedian pole. The details of the female genital complex are similar to those of *A. auritum*. The arrangement and distribution of the vitellaria and course of the uterus are similar in the two species. In *A. singulare* the metraterm is much longer and it is located on the left side of the cirrus sac. This latter condition is probably not significant, since in four of the specimens of *A. auritum* the metraterm is on the left and the cirrus sac on the right. The eggs are thin-shelled, collapsed, and measure about 0.03 by 0.018 mm.

DISCUSSION

This species differs from the preceding one in relative size of suckers and gonads, and especially in the size and extent of the cirrus sac.

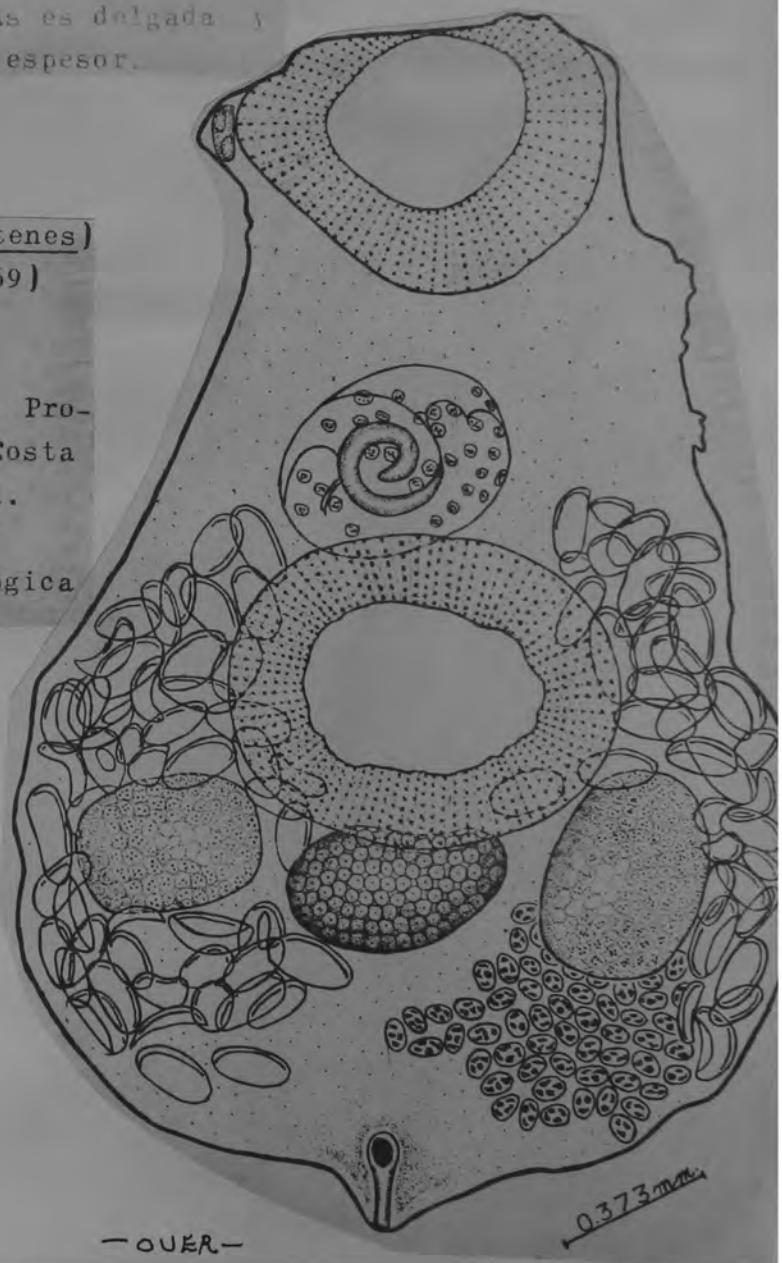
Anenterotrema freitasi, Caballero 1964

Anenterotrema freitasi ~~Caballero~~ Caballero, 1964

Esta especie ha sido colectada en el intestino del mismo murciélago en la que se colectó la especie anteriormente descrita. El cuerpo del parásito tiene la forma de un pequeño matraz de fondo plano, con el extremo anterior truncado y ancho y el posterior ancho y ligeramente redondeado y mide 0.373 mm de largo por 0.238 mm de ancho, a nivel de su porción más amplia; la cutícula está desprovista de espinas es delgada y transparente y mide 0.002 mm de espesor.

Hospedador. Micronycteris (Xenoctenes) hirsuta (Peters, 1869) Sanborn, 1949.
Localización. Intestino delgado.
Localidad. Río Grande de Atenas, Provincia de Alajuela, Costa Rica. América Central.

Ejemplar en la colección helmintológica del autor.



—OUER—

La ventosa oral es tan grande como el acetábulo, en forma de urna, musculosa, terminal y mide 0.082 mm de diámetro anteroposterior por 0. 101 mm de diámetro transversal: el acetábulo está situado en la región media ventral del cuerpo, es musculoso, grande y mide 0.094 mm de diámetro anteroposterior por 0.123 mm de diámetro transversal; la relación entre los diámetros del acetábulo y los de la ventosa oral es: 1:1 x 1:1.2. El aparato digestivo falta como en todas las especies del género.

El poro reproductor se abre como a la mitad de la distancia entre el borde posterior de la ventosa oral y el borde anterior del acetábulo; los testículos ocupan el área caudal del cuerpo, en posición lateral, uno en frente del otro, son de contorno liso y de forma ovoidea y miden, el derecho 0.045 mm de diámetro anteroposterior por 0.053 mm de diámetro transversal y el izquierdo 0.045 mm de diámetro anteroposterior por 0.053 mm de diámetro transversal; por delante del acetábulo y coincidiendo parcialmente con su área, existe la bolsa del cirro, la cual es un órgano ovoideo que mide 0.061 mm de diámetro anteroposterior por 0.041 mm de diámetro transversal; dentro de este órgano se encuentra, en el fondo, una pequeña vesícula seminal que mide 0.025 mm de largo por 0.012 mm de ancho; la próstata está constituída por escasas células repartidas en todo el interior de la bolsa del cirro; el órgano copulador no fué visible.

El ovario, también ocupa la posición caudal del cuerpo, pero además está situado en el área media ventral, entre los dos testículos; es de forma piramidal cuyo vértice está orientado hacia el borde posterior del cuerpo y mide 0.049 mm de diámetro anteroposterior por 0.066 mm de diámetro transversal; la glándula de Mehlis y el ootipo se localizan en el espacio posterolateral izquierdo del cuerpo y se hallan parcialmente cubiertos por la única glándula vitelina; el útero lleno de huevos, se extiende fundamentalmente en las porciones laterales del cuerpo, desde el borde posterior

-continued-

Anenterotrema freitasi, Caballero 1964

hasta el borde posterior del acetábulo, la rama izquierda de él, es la que termina en el poro reproductor. Los huevecillos son escasos, grandes, de cáscara amarillenta y lisa, operculados y miden de 0.025 a 0.029 mm de largo por 0.016 a 0.016 mm de ancho

La única glandula de folículos vitelinos se encuentra situada en un área lateral y caudal, entre el ovario y el testículo izquierdo cubriendo en parte al ootipo y a la glándula de Mehlis y está formada por escasos y pequeños folículos vitelinos. El poro excretor es terminal

Discusión. El género Anenterotrema Stunkard, 1938 posee hasta la fecha presente cinco especies: A. auritum Stunkard, 1938 (especie tipo); A. singulare Stunkard, 1938; A. stunkardi Caballero y Crocott, 1960; A. eduardocaballeroi (Freitas, 1960) Caballero, 1961 y A. liliputianum (Travassos, 1928) n. comb. (sins. Paralecithodendrium liliputianum Travassos 1928 y Edcaballerotrema liliputianum (Travassos 1928) Freitas 1961). La nueva especie Anenterotrema freitasi n. sp que se instituye en este estudio se distingue fundamentalmente de las cinco ya conocidas por la presencia de un solo grupo de folículos vitelinos en la porción laterocaudal izquierda del cuerpo, por detrás del testículo del mismo lado

La nueva especie que se ha descrito en líneas anteriores ha sido dedicada al señor doctor J. F. Teixeira de Freitas, helmintólogo del Instituto Oswaldo Cruz, de Río de Janeiro como reconocimiento a su magnifica labor en el campo de la Helmintología

Lecithodendriidae

Anenterotrema stunkardi sp. n., Caballero and Grocott 1960

Fam. Anenterotrematidae Yamaguti, 1958

Anenterotrema stunkardi sp. nov.

(Figs. 2 y 3)

Caballero and Grocott 1960

Para la descripción de la presente especie contamos con tres preparaciones microscópicas, en la primera de ellas existen diez ejemplares, en la segunda once y en la tercera diez, examinando en total 31 ejemplares teñidos. Son gusanos pequeños, de cuerpo ovoide con el extremo anterior más angosto que el posterior, siendo ambos redondeados y miden 0,611-0,715 mm de largo por 0,350-0,372 mm de ancho a nivel de su porción más amplia; la cutícula es transparente, delgada, sin espinas y mide 0,004 mm de espesor.

La ventosa oral es muy grande, subterminal, fuertemente musculosa, su diámetro anteroposterior es ligeramente mayor que el transversal, por consiguiente, es ovoidea y mide de 0,116-0,150 mm de diámetro anteroposterior por 0,112-0,129 mm de diámetro transversal; el acetábulo está situado inmediatamente por detrás de la bolsa del cirro en posición ventral, media, es ligeramente circular, muy deformable, menos musculoso que la ventosa oral, tan grande como ésta, dista de 0,216-0,316 mm del borde anterior del cuerpo y mide de 0,108-0,116 mm de diámetro anteroposterior por 0,104-0,112 mm de diámetro transversal; la relación entre el tamaño de las dos ventosas, tomando como unidad el acetábulo es, 1:1 × 1:1 a 1:1 × 1:1

La boca es amplia, subterminal, se abre ventralmente y presenta forma triangular o cuadrangular; no existen faringe, esófago, ni ciegos intestinales y creemos que los alimentos ya digeridos previamente por el huésped, atraviesan los tegumentos, penetrando también por su amplia boca hacia el mesénquima conjuntivo.

Los poros reproductores están separados; el masculino es amplio, en tanto que el femenino es una fisura oblonga que se halla situada por delante y lateralmente al masculino, ambos distan del borde anterior del cuerpo de 0,187 a 0,200 mm y se les encuentra sobre la línea media ventral del cuerpo, como a la mitad de la distancia entre el borde posterior de la ventosa oral y el anterior del acetábulo, por delante de la bolsa del cirro. Los testículos son dos cuerpos ovoides o bien esféricos, se les encuentra a uno y otro lado del cuerpo es decir, en posición lateral, por detrás de la bolsa del cirro, pero a la misma altura o a nivel del acetábulo, a menudo se les encuentra más adelante o más hacia atrás, o

Fig. 2

Anenterotrema stunkardi sp. nov. dibujo de un ejemplar. Region ventral

Fig. 3 (photo)

Anenterotrema stunkardi sp. nov. Microfotografia de un ejemplar Región ventral

(over)

bien más proximos a la línea media, según sea la intensidad de contracción del cuerpo de los parásitos; son de bordes lisos, enteros y de la porción interna, en cada uno, sale un conducto deferente que se dirige hacia adelante y enmedio, hasta penetrar a la porción posterior de la bolsa del cirro; el testículo derecho mide de 0,071-0,133 mm de diámetro anteroposterior por 0,054-0,108 mm de diámetro transversal y el izquierdo de 0,062-0,125 mm de diámetro anteroposterior por 0,067-0,121 mm de diámetro transversal; la bolsa del cirro es un cuerpo grande que cuando el parásito está completamente descansando sobre la región ventral o dorsal, se presenta completamente redondeada y cuando está de lado, es por completo piriforme, con sus paredes muy musculosas; se le halla por delante del acetábulo, al que es tangente en algunas ocasiones y mide de 0,104-0,116 mm de largo por 0,062-0,079 mm de ancho; la vesícula seminal es grande, se enrolla a manera de un cordón, que ocupando la porción media posterior de la bolsa del cirro mide de 0,083-0,091 mm de largo por 0,042-0,075 mm de ancho. En muchos de los ejemplares estudiados el cirro se presenta evaginado, es éste un órgano robusto, musculoso, en forma de tubo, cuya superficie endotelial no lleva espinas, ni tubérculos, su extremo distal se ensancha ligeramente a manera de un botón y mide de 0,100-0,125 mm de largo por 0,021-0,029 mm de ancho; la glándula prostática se halla formada por pequeñas y escasas células que se orientan en torno a la vesícula seminal.

El ovario es un cuerpo postesticular que, normalmente se encuentra en posición caudal, media, pero que a consecuencia de las contracciones sucesivas de los animales, puede desplazarse hacia adelante y en algunas ocasiones llegar hasta ser tangente de los testículos; es esférico, de contorno liso, ligeramente menor que los testículos y mide de 0,058-0,075 mm de diámetro anteroposterior por 0,062-0,083 mm de diámetro transversal; del ovario sale un corto oviducto que pronto se ensancha para formar el ootipo, órgano que forma un istmo, en el que va a desembocar el conducto corto del receptáculo seminal; este órgano es esférico u ovoideo, como de la mitad del tamaño del ovario y mide 0,050 mm de diámetro anteroposterior por 0,046 mm de diámetro transversal. El útero ocupa el área comprendida entre la bolsa del cirro y el borde posterior del cuerpo, extendiéndose también en las áreas laterales y cubriendo casi siempre las glándulas reproductoras y, sobre todo, las glándulas vitelógenas, no obstante que en algunos casos puede disponerse en torno a los testículos y al ovario; los huevecillos son numerosos, relativamente grandes, operculados, de cáscara lisa, gruesa y pardo-amarillenta; miden 0,029 mm de largo por 0,021 mm de ancho.

Las glándulas vitelógenas están formadas por pequeños y dispersos folículos postesticulares, mal desarrollados, que generalmente ocupan la porción central del cuerpo, por delante del ovario. El poro excretor es terminal, se abre en el borde posterior del cuerpo, sobre la línea media; la vesícula seminal no fue observada a consecuencia del gran desarrollo uterino.

Huésped.—*Phyllostomus hastatus panamensis* Allen.

Localización.—Intestino delgado.

Localidad.—Cuevas de Chilibrillo, Panamá (Centroamérica).

Tipo.—Colección Helmintológica del Instituto de Biología. No. 217-14.

Paratipo.—Colección Helmintológica del Laboratorio de Helmintología de la Escuela Nacional de Ciencias Biológicas del I.P.N. No. 1-20

La especie ha sido dedicada con todo respeto al Prof. H. W. Stunkard, del American Museum of Natural History de Nueva York,

Discusión.—Los ejemplares que se han estudiado en líneas anteriores, corresponden sin ninguna duda, al género *Anenterotrema* creado por H. W. Stunkard, en 1938, con tremátodos intestinales de murciélagos de las cuevas de la Península de Yucatán (México), por la ausencia completa del aparato digestivo.

Son distintos de *A. auritum* Stunkard, 1938 por la ausencia de las papilas cefálicas laterales peribucales, por el tamaño de los testículos y también por el tamaño y posición del ovario; es distinto asimismo de *A. singulare* Stunkard, 1938 por el tamaño, forma y estructura de la bolsa del cirro, por la posición de los testículos y del ovario; por todos estos hechos, hemos considerado a nuestros ejemplares como una nueva especie a la cual hemos denominado, *A. stunkardi*.

A new species of the genus *Anenterotrema*, erected by H. W. Stunkard in 1938 for trematodes from the intestine of bats from caves on the Yucatan Peninsula (Mexico), is described as *A. stunkardi* n. sp. Our new species differs from *A. auritum* Stunkard, 1938 in the absence of the two anterior and lateral cephalic papillae on the oral sucker, in size of the testes, and also in the position and size of the ovary; *Anenterotrema stunkardi* n. sp. is differentiated from *A. singulare* Stunkard, 1938 in the size, form and structure of the cirrus pouch, by the position of the testes and ovary and by the form and distribution of the vitellaria. A digestive apparatus is completely lacking in our examples of this new species.

ANENTEROTREMA

Trichobilharzia?

Atriotrema lecitholaterale nov. sp. Belopolskaja, 1958

Хозяин: тулес (*Squatarola squatarola*).
Локализация: задний отдел тонкой кишки.
Место обнаружения: Восточный Мурман.

Описание. Мелкие трематоды; тело сужено к переднему концу и расширено к заднему. Кутикула без шипов. Длина тела 0,374—0,431 мм,

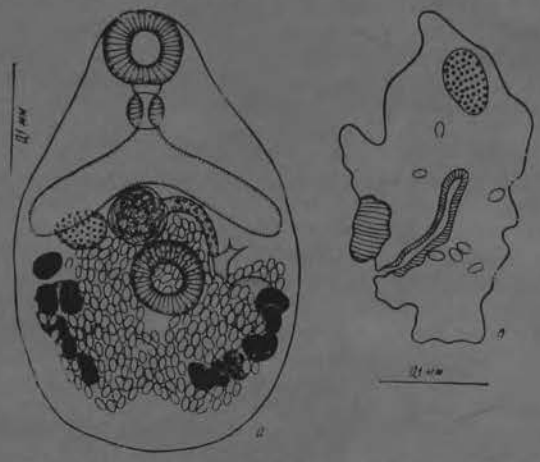


Рис. 1. *Atriotrema lecitholaterale* nov. gen. nov. sp.
а — марита; *б* — поперечный разрез в области полового атриума

ширина тела на уровне брюшной присоски 0,256—0,282 мм; ротовая присоска субтерминальная, 0,068—0,074×0,064—0,072 мм. Предглотка очень короткая; у некоторых экземпляров она совсем отсутствует. Глотка 0,028—0,034×0,034—0,042 мм. Кишечные ветви направлены в стороны и оканчиваются на уровне яичника. Брюшная присоска удалена от переднего конца тела на 0,205—0,233; ее диаметр 0,059—0,062×0,068—0,077 мм. Семенники лежат сразу же за брюшной присоской. Семенной пузырек округлый; перед брюшной присоской от него идет простатическая часть с железами (их удается рассмотреть только на срезах). Узкий половой атриум открывается левее брюшной присоски; половое отверстие удлиненно-вытянутое. Маленький яичник лежит справа и впереди брюшной присоски. Желточники состоят из 6—8 крупных фолликулов. Петли матки занимают заднюю половину тела и простираются несколько вперед от брюшной присоски. Яйца 0,017—0,018×0,009—0,010 мм.

ATRIOTREMA

Brandesia Stossich, 1899

Generic diagnosis. — Lecithodendriidae, Pleurogenetinae: Body inverted pyriform, spinulate. Oral sucker very large, subterminal; esophagus short, ceca saccular. Acetabulum small, near posterior extremity. Testes symmetrical, posterior to ceca. Cirrus pouch small. Genital pore marginal, postequatorial. Ovary median, between testes and intestinal bifurcation. Laurer's canal long, opening far posteriorly. Vitellaria consisting of small number of follicles, on a level with oral sucker. Uterus winding throughout body length; eggs numerous, small, narrow. Excretory vesicle small, V-shaped. Parasitic in Lieberkühn's glands of frogs.

Genotype: *B. turgida* (Brandes, 1888) Stoss., 1899 (Pl. 39, Fig. 491; Pl. 42, Fig. 516), in small intestine of *Rana esculenta*, *R. ridibunda*, *R. arvalis;* Europe.

BRANDESIA

BRENESIA ~~n. gen.~~ CABALLERO AND CABALLERO R., 1969

DIAGNOSIS : *Lecithodendriidae*. Corps petit, ovale couvert d'épines ; ventouses grandes ; acetabulum plus grand que la ventouse buccale, situé dans la moitié postérieure du corps, en arrière de l'équateur ; pharynx petit ; œsophage court ; caecums très courts et sacciformes. Orifice génital sur le bord latéro-antérieur gauche du corps ; testicules légèrement lobés, tangents au bord latéral de la moitié antérieure du corps ; poche du cirre située sur le côté gauche, équatoriale, formée de deux régions : une postérieure ovale et une autre antérieure tubuleuse (pars prostatique ?) s'ouvrant dans l'orifice génital : vésicule séminale interne divisée en deux par la présence d'une glande prostatique bien développée, des deux régions, la postérieure est grosse et l'autre, antérieure, petite, se termine dans la portion tubuleuse de la poche du cirre. Ovaire tangent ou couvrant le caecum droit, de forme lobée ou en trèfle ; ootype, glande de Mehlis, canal de Laurer et réceptacle séminal présents, situés en arrière de l'ovaire ; utérus largement développé, occupant principalement la moitié postérieure et latérale droite du corps : métraterme grand, situé entre le caecum gauche et la portion antérieure de la poche du cirre, pourvu à l'intérieur d'une paroi épaisse de cellules allongées, orientées vers la lumière de l'organe ; œufs nombreux, operculés, à coquille mince et pourvus dans leur extrémité postérieure d'un mamelon. Vitellogènes rares, gros, situés de part et d'autre de la ventouse buccale, sur la région dorsale de cet organe. Pore excréteur sur le bord postérieur du corps ; vésicule excrétrice en V.

Espèce type : *Brenesia chabaudi* n. g., n. sp. Parasite de l'intestin grêle de Ranidae Bonaparte, 1831 (Amphibia Linnaeus, 1758). d'Amérique Centrale.

Discussion

Par la présence d'une vésicule excrétrice en V, de vitellogènes dans la région latéro-céphalique, de caecums tres courts, par la forme et la localisation de l'appareil reproducteur, ce nouveau genre appartient à la famille *Lecithodendriidae* Odhner, 1911. Il est très proche des genres *Pleurogenoides* Travassos, 1921 et *Pseudosonsinotrema* Dollfus, 1951. Il diffère du premier de ces genres, par la forme et structure de la poche du cirre, du métraterme et par la situation de l'ovaire et des testicules ; ces mêmes caractères le font différent de *Pseudosonsinotrema*, bien que, chez l'espèce *P. japonicum* (Yamaguti, 1936) Manter et Pritchard, 1964, le métraterme est entouré d'une région glandulaire, la structure de cet organe et celle de la poche du cirre ainsi que leur position sont très différentes de cette espèce.

Par tous ces caractères, nous pensons donc que notre espèce est nouvelle et nous la nommons *Brenesia chabaudi* n. g. n. sp. Le nom du genre est dédié à M. Rodrigo Brenes, M. de l'Université de Costa Rica et le nom de l'espèce à M. le Professeur Alain G. Chabaud du Muséum National d'Histoire Naturelle de Paris, qu'ils veuillent trouver ci notre reconnaissance pour leur labeur dans le domaine de la Parasitologie.

Nous remercions vivement le Professeur R. Ph. Dollfus, qui, lors d'un court séjour à Paris a mis à notre disposition l'espèce-type du genre *Pseudosonsinotrema* pour la comparer avec l'espèce que nous venons de décrire, nous permettant ainsi de conclure aisément que nos specimens constituent un nouveau genre.

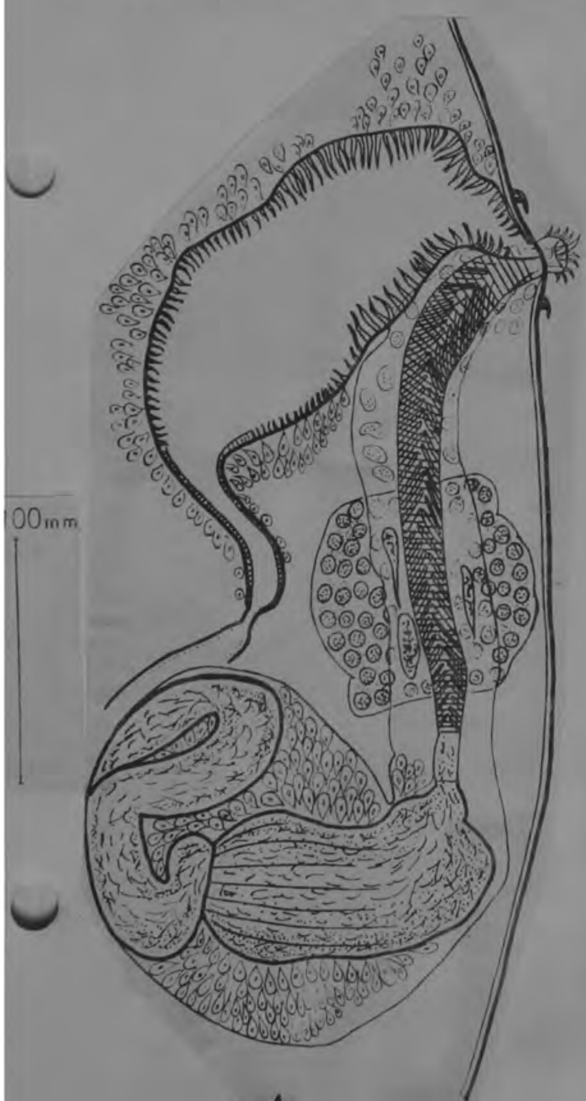
[illegible] (C+C) Sullivan, in press [1972]

BRENESIA CHABAUDI, ~~n.g. n. sp.~~ CABALLERO y CANO CABALLERO R, 1969

Le corps des parasites, ovale et petit, mesure 0.714-0.743 mm de long sur 0.40
0.500 mm de large. La cuticule épaisse de 0.003 mm est armée de petites épines qu
s'étendent sur tout le corps. Elles sont plus abondantes dans la moitié antérieure, e
mesurent 0.007 mm de long sur 0.002 mm de large au niveau de leur naissance.

Les ventouses sont grandes, légèrement sphériques. La ventouse buccale, muscu
leuse, subterminale, mesure 0.109-0.126 mm de diamètre antéro-postérieur sur 0.11
0.116 mm de diamètre transversal. La ventouse ventrale, légèrement plus grande qu
la ventouse buccale est située dans la moitié postérieure du corps, en arrière d
l'équateur. Sa région antérieure est tangente, à droite, au réceptacle séminal, et à gauch
à la poche du cirre. Elle mesure 0.119-0.139 mm de diamètre antéro-postérieur su
0.126-0.129 mm de diamètre transversal. Le rapport, ventouse ventrale/ventouse buc
cale est : 1 : 1.09 × 1 : 1.08 à 1 : 1.1 × 1 : 1.1.

La bouche ample, légèrement circulaire mesure 0.068-0.071 mm de diamètr
antéro-postérieur sur 0.078-0.082 mm de diamètre transversal. Il n'y a pas de pré
pharynx. Le pharynx, petit, piriforme et musculeux, mesure 0.034-0.041 mm de diamè
tre antéro-postérieur sur 0.037-0.037 mm de diamètre transversal. L'œsophage, tub
étroit à parois minces, est court, mesure 0.044-0.068 mm de long sur 0.014-0.017 mn



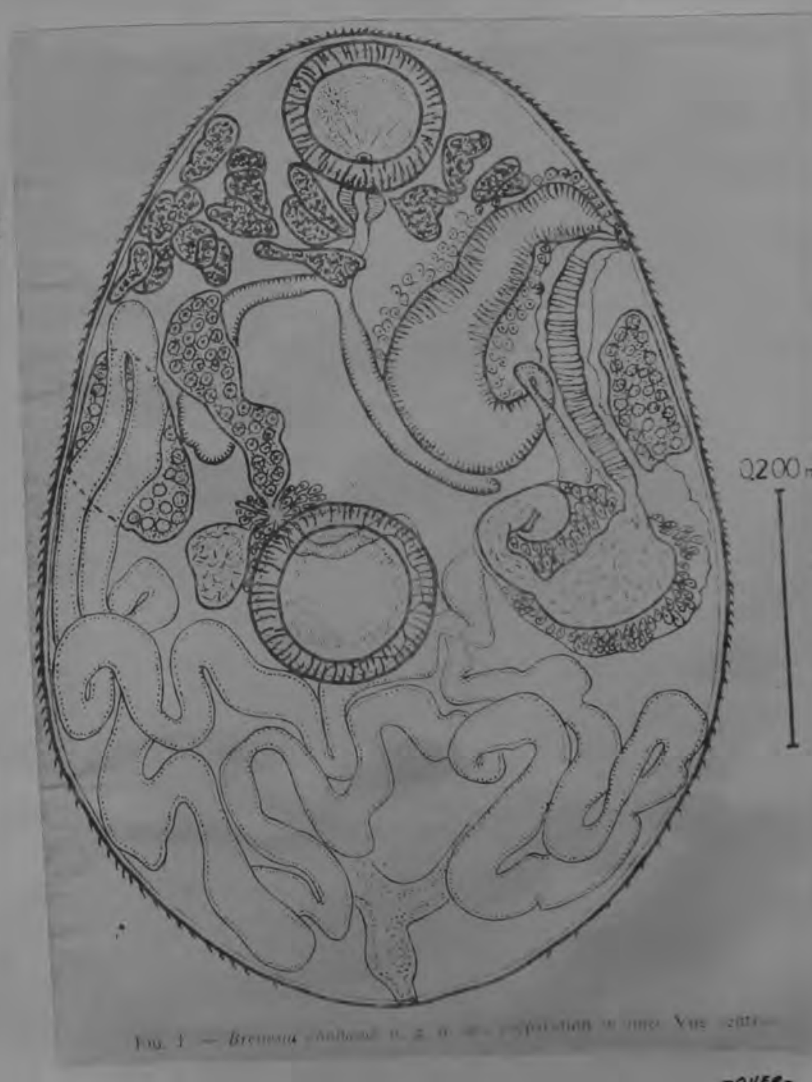


Fig. 1 — *Brenesia* [illegible]

-OVER-

de large : la bifurcation intestinale se trouve au niveau du métraterme, à 0.108-0.204 mm du bord antérieur du corps. Les caecums sont très courts, étroits dans la partie antérieure et larges dans la postérieure, tangents au testicule droit, à l'ovaire et au métraterme, mesurant le droit 0.119-0.187 mm de long sur 0.037-0.037 mm de large, le gauche de 0.116-0.204 mm de long sur 0.020-0.034 mm de large.

Appareil génital. L'orifice génital, situé antérieurement sur le bord latéral gauche du corps, à 0.187-0.221 mm du bord antérieur, mesure 0.014-0.014 mm de diamètre. Les testicules, petits, ovales aux bords peu lobés, sont situés dans la moitié antérieure du corps, en avant de l'équateur : le droit entre le caecum droit et la paroi du corps ; le gauche dans l'aire limitée par, à gauche la paroi du corps, en avant le métraterme, en arrière la poche du cirre et, dorsalement la pars prostatique : le testicule droit mesure 0.105-0.146 mm de long sur 0.075-0.095 mm de large, le testicule gauche 0.085-0.109 mm de long sur 0.051-0.088 mm de large. La poche du cirre est l'organe le plus développé de l'appareil reproducteur de ce trématode, elle possède la forme d'une « pipe », située en arrière de l'équateur du corps sur le côté gauche, entre la ventouse ventrale et le bord latéral. Elle est constituée de deux parties : une postérieure ovale et une autre antérieure tubuleuse (pars prostatique) qui suit parallèlement le bord latéral du corps et se termine dans l'orifice génital ; la partie postérieure mesure 0.109-0.119 mm de long sur 0.146-0.167 mm de large ; l'antérieure (pars prostatique ?) mesure 0.214-0.238 mm de long sur 0.024-0.037 mm de large. La vésicule séminale est séparée par la présence de la glande prostatique ; la plus grosse partie occupe le fond de la poche, mesurant 0.075-0.112 mm de long sur 0.068-0.099 mm de large, la partie antérieure mesure 0.061-0.085 mm de long sur 0.051-0.102 mm de large. La glande prostatique bien développée, occupe la périphérie et le centre de la poche du cirre, entre les deux portions de la vésicule séminale ; le cirre, corps cylindrique, petit et musculeux mesure 0.014 mm de long sur 0.017 mm de large.

L'ovaire lobé, situé à droite de la ligne médiane, tangent ou couvrant partiellement le caecum intestinal du même côté, en avant de l'équateur du corps, allongé ou bien en forme de trèfle, mesure 0.099-0.160 mm de long sur 0.051-0.088 mm de large. L'ootype et la glande de Mehlis se trouvent en arrière de l'ovaire, proches de la ligne médiane équatoriale du corps. Nous avons bien observé le canal de Laurer et, le réceptacle séminal, petit, qui mesure 0.065-0.068 mm de long sur 0.041-0.068 mm de large. L'utérus, prend naissance dans la région de l'ootype et se dirige obliquement vers la ligne médiane equatoriale du corps, croise l'acétabulum en se dirigeant vers l'extrémité postérieure gauche du corps, par derrière la poche du cirre, puis remonte vers la ventouse ventrale, dès son bord postéro-latéral droit il traverse vers l'aire droite latérale du corps et s'y étend en remplissant toute l'aire comprise entre le bord postérieur du corps et le testicule droit en le dépassant, puis, l'utérus descend jusqu'au bord postérieur de la ventouse ventrale et obliquement remonte, tangent au bord interne de la poche du cirre, se mettant finalement en communication avec le métraterme. Le métraterme est un organe aussi grand que la poche du cirre, situé obliquement entre le caecum gauche et l'orifice génital, sa paroi interne est entourée de multiples cellules glandulaires ; dans sa partie intérieure, constituant la paroi, il existe des cellules allongées, dirigées vers la cavité qui est ample dans la région postérieure de cet organe et étroite, comme un tube, dans la région antérieure. S'ouvrant dans l'orifice génital, cet organe, mesure 0.214-0.309 mm de long sur 0.075-0.078 mm de large. Les œufs nombreux, à coquille mince, ambrés, operculés, portant un petit mamelon à l'extrémité postérieure ; ils mesurent 0.019-0.019 mm de long sur 0.008-0.009 mm de large.

Les vitellogènes sont rares, grands, lobés, soit placés de chaque côté de la ventouse buccale, entre cet organe et le métraterme à gauche et, entre le testicule, le caecum et la ventouse buccale à droite, soit étendus de toute la région dorsale à la ventouse buccale, c'est-à-dire, que les vitellogènes occupent fondamentalement les aires antérieures dorsales et latérales à la ventouse buccale et le pharynx.

Le pore excréteur, ample, s'ouvre dans l'extrémité postérieure du corps, il communique avec une vésicule excrétrice en V.

Hôte : *Rana pipiens* Schreber, 1872.

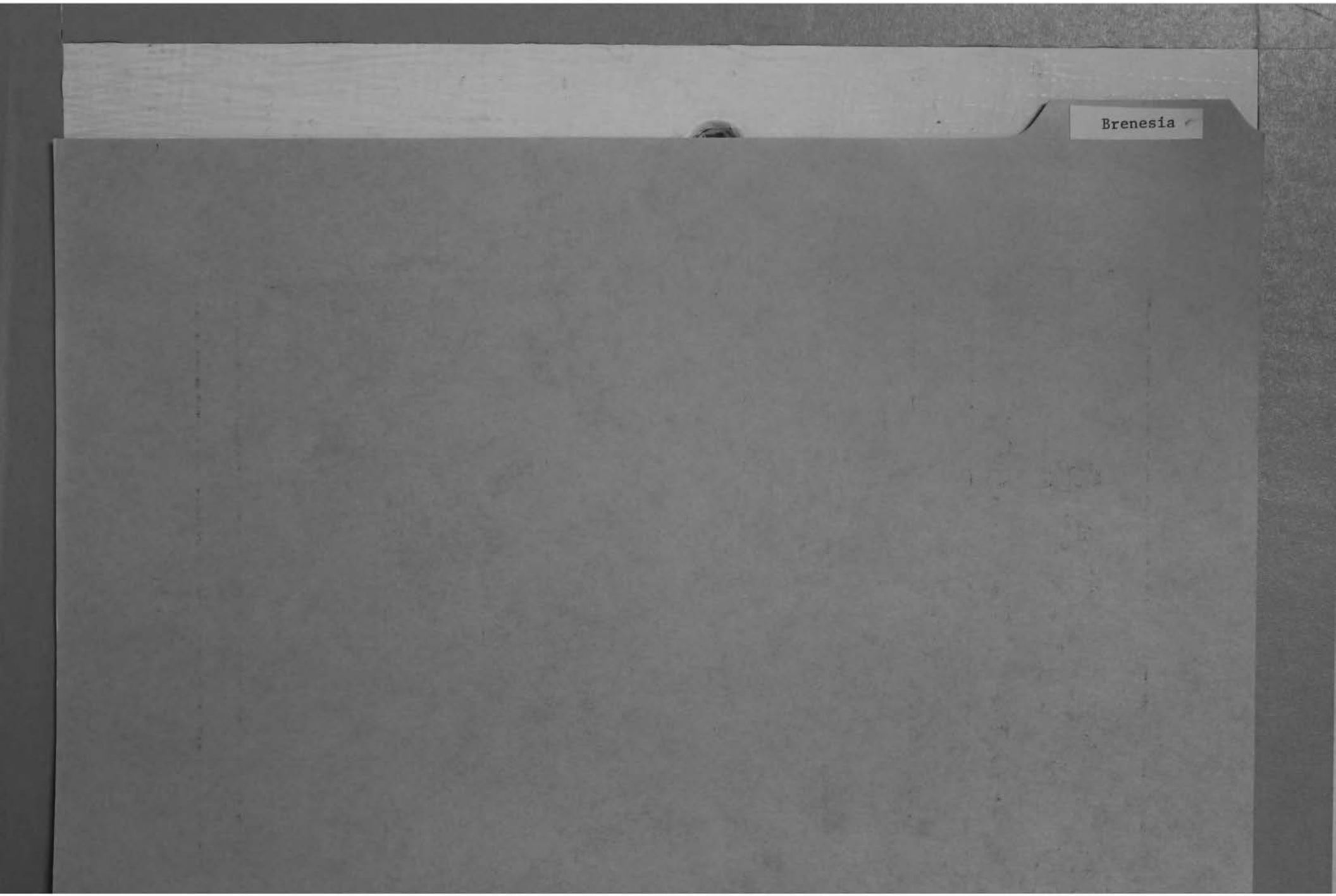
Localisation : Intestin grêle.

Localité : Puerto Viejo, Sarapiqui, Provincia de Heredia, Costa Rica, Amérique Centrale.

Holotype : Collection Helminthologique de E. Caballero y C., n° 504.

Paratypes : Collection Helminthologique de la Faculté de Microbiologie de l'Université de Costa Rica et de l'Institut de Biologie de l'Université Nationale Autonome de Mexico, N° 225-6.

Le trématode qui fait l'objet de cette étude nous a été confié par Rodrigo Brenes qui l'a récolté de l'intestin grêle de *Rana pipiens* Schreber, 1872, le 18 juillet 1967. Les huit exemplaires trouvés ont été aplatis entre lamelles, fixés dans une solution de bichlorure de mercure et colorés avec le carmin de Grenacher. Nous avons employé le terpineol pour les éclaircir et la résine synthétique neutre pour le montage définitif. La description a été réalisée sur quatre exemplaires.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